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New Facts About Formalin Treatment

By H. G. Ahrens

Instructor in Beekeeping,
University of Minnesota



The results of Mr. Ahrens' work are of more than passing interest to the beekeeper. So much has been written about the sterilization of combs with alcohol-formalin and formalin gas that it was hoped a dependable method of saving combs from diseased colonies was within reach.

In the experiments described scales of American foulbrood taken from diseased combs were soaked in 35 per cent formalin for as long as thirty-six hours and yet showed growth after many days of incubation. The question remains as to whether formalin can be depended upon to sterilize combs completely, and, if so, what length of exposure is necessary and how strong a solution must be used?

THE sterilizing of brood combs infected with American foulbrood has caused widespread comment among the beekeeping public, therefore any information of success or failure is always received with interest. Numerous articles appear in bee journals and bulletins from time to time stating the successful use of a formalin treatment, whereby the destruction by fire of infected combs and equipment is eliminated. In the more recent literature the water-formalin, alcohol-formalin and formaldehyde gas has been the topic of discussion, and many writers are making recommendations as to the practicability of using formalin to sterilize combs infected with American foulbrood. Some have had partial success and others have had apparently 100 per cent control, which in some instances has been questioned. When the disease reappears in two or three years no one can say whether this was caused by some outside factor or by the fact that the treatment was at fault.

The formalin treatment methods are the outgrowth of reports of experimentation by beekeepers in addition to research in the Bureau of Entomology, United States Department of Agriculture, and elsewhere. The first report of this work was a bulletin, "Bacteria of the Apiary, with Special Reference to Bee Disease," by G. F. White. This bulletin tells, among other things, of a formaldehyde gas treatment for European foulbrood when the difference between European foulbrood and American was still an unsettled question. In 1920, Bulletin 809, "American Foulbrood," by G. F. White, gives an account of detailed experiments with disinfectants on the spores of *Bacillus larvæ*. This work was followed by circular No. 284, entitled "The Sterilization of American Foulbrood Combs," by A. P. Sturtevant, which explains in detail research with formalin in combination with other materials and de-

scribes research work on such important problems as length and strength of treatment, surface tension, vacuum treatment, etc.

The following report of cultural experiments in the laboratory with water-formalin on the scales may be of interest to the beekeeping public: For the benefit of those that wish to verify this work or try out other disinfecting experiments in the laboratory, a brief procedure, that anyone can duplicate, is given in the following paragraphs:

Bacillus larvæ does not grow on the ordinary media used in the laboratory, and considerable time was required to select a media that would give good growth and at the same time be adaptable for cultural purposes. The formulæ and technique of Bulletin 809, with slight modifications, were found to be most satisfactory. An egg-yolk suspension broth was used for all cultures.

The broth is made by using 3 grams of beef extract, 5 grams of peptone and 1000 c. c. of distilled water. The broth was tubed, 5 c. c. in each tube, and sterilized. This may be stored until needed. To this was added 1 c. c. of egg-yolk suspension, which was made as follows: One fresh egg, the shell having been disinfected in mercuric chloride (1:1000 strength for five minutes), was broken with flamed forceps, the white poured off, and the yolk dropped into a wide-mouthed flask containing 70 c. c. of distilled water, the flask and water having been sterilized beforehand. With a sterile pipette 1 c. c. of the aqueous suspension, resulting from agitating the flask, was transferred to each 5 c. c. of broth. This suspension will keep for months, provided no contamination occurs. The selectivity of this media for the spores of *Bacillus larvæ* was astonishing. Such common spore formers as *Bacillus coli* and *Bacillus subtilis* will not grow in it, which is advantageous in preventing contamination. In like manner *Bacillus larvæ* (Amer-

ican foulbrood) does not grow on the ordinary laboratory media—i. e., veal infusion broth, beef broth or agar slants. This fact serves as an excellent guide and can be made use of in many ways.

The diseased material was taken from a hive that was heavily infected and having all the symptoms of American foulbrood. An infected comb was sliced vertically with a razor blade and the hard, dry scales removed with forceps and stored in a test tube for further use.

The laboratory technique was, briefly, as follows: Empty tubes were plugged with cotton and sterilized. Then 10 c. c. of the disinfectant to be used was poured into them. The scale of foulbrood was dropped into the tube of disinfectant, left for a definite length of time, then fished out with a wire loop, transferred to a tube of water to remove excess formalin, and cultured on media to see if it would develop the vegetative forms. The tubes were examined every two days by making stained slides for microscopic examination. In planning these steps care must be taken to remove all disinfectant before the scale is cultured, because a small amount of formalin in the media will render it worthless. In actual practice, when disinfecting combs the formalin evaporates, thus eliminating the above mentioned precaution.

The temperature at which the cultures were incubated is 34 to 35 degrees C., or approximately the brood rearing temperature in the hive. This temperature is not a critical factor, as 37 degrees C., or blood heat, was also found to be satisfactory.

The first experiments with *Bacillus larvæ* were made in an attempt to discover a new treatment which would be practicable, safe, and lend itself to the routine of apiary practice. In the course of these experiments it developed that the cultures that were incubated for more than the required three days developed an

abundance of growth. Later another set of experiments was planned and carried out with practically the same results. A 20 per cent formalin was formerly thought to kill the spores of *Bacillus larvæ* within the scales in a few hours; however, the laboratory tests reveal new information. It was these results that prompted further investigations to determine a range of safety for disinfecting scales with formalin solutions. This information was to be used as a factor in determining the length of treatment for open cells, then capped cells, and finally formaldehyde gas on closed cells. Little needs to be done on the above mentioned until we have definitely determined a safe range for 20 per cent formalin on the scale itself. This work involved one hundred and seventy experiments with water formalin and 25 with commercial alcohol formalin. The results are outlined in table form and are self-explanatory.

A scale immersed in a 20 per cent water-formalin solution for thirty-six hours at room temperature and likewise a scale treated with 35 per cent water-formalin for twenty-four hours was not safe from a cultural standpoint. In these experiments the commercial alcohol-formalin was slightly less efficient than the 20 per cent water-formalin.

A set of experiments was conducted to determine whether suspended spores (not scales) would be viable after twenty-four hours' treatment in a 20 per cent formalin solution; no growth could be produced. This would have a tendency to show that for some unknown reason the spores in a scale are protected.

The formalin (37 per cent formaldehyde gas) was checked by taking this chemical from three different sources. All gave practically the same results. The alcohol formalin was taken from a five-gallon can which is sold on the market as a comb sterilizer. A parallel test with a 10 per cent formalin solution on

Bacillus subtilis, which is a very resistant spore former, showed this spore to be destroyed in a two-hour treatment.

Ten pure cultures of *Bacillus larvæ* sealed in test tubes from the Bureau of Entomology, United States Department of Agriculture, were used in making comparisons as to the morphology, motility, spore formation, staining properties, oxygen requirements, and growth on agar slants. These comparisons proved that the bacilli grown from infected scales treated as described above were identical with the bacilli of the pure cultures and with those described by White in Bulletin 809.

This resistance of American foulbrood to formalin has never been demonstrated on *Bacillus larvæ* by laboratory methods; however, there is evidence that the actual tests in the apiary would bear out the fact that the combs treated with 20 per cent formalin for twenty-four hours were not safe. More work should be applied to the study of this disease in order that a practical method of disinfecting may be worked out. At the present time there is no method of sterilizing that assures 100 per cent results, and that is the ultimate goal, as partial control is worse than wholesale destruction when labor and time are taken into consideration.

The Department of Beekeeping of the University of Minnesota will be glad to answer questions and send microscopic slides of pure cultures to other workers interested in laboratory experiments with *Bacillus larvæ*.

I am indebted to Dr. W. P. Larson and his staff of the Department of Bacteriology for facilities and active interest shown in this work; to Dr. M. C. Tanquary of the Department of Beekeeping for his assistance and cooperation, and to Dr. C. E. Burnside, Bureau of Entomology, United States Department of Agriculture, for the supply of pure cultures of *Bacillus larvæ*.

Cultural Results of Ten Tests Each with Samples of Scales Treated Varying Length of Time with 20% Formalin Solution

Varying lengths of treatment	Cultures showing growth of <i>Bacillus larvæ</i> and incubation period in days																	Cultures showing no growth
	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	
54 hrs.																		10
48 hrs.																		10
42 hrs.																		10
36 hrs.							1											9
30 hrs.									1		2		3		1	2		2
24 hrs.													2	1	7			7
18 hrs.				1											1	8		8
12 hrs.		1					2	3	2						2	0		0
6 hrs.		4	5	1														0
0		10																0

Cultural Results of Ten Tests Each with Samples of Scales Treated for 24 Hours in Varying Strengths of Formalin

Per cent of formalin	Cultures showing growth of <i>Bacillus larvæ</i> and incubation period in days																	Cultures showing no growth
	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	
35%																		3
30%										1								9
25%																		*10
20%															2	1	7	7
15%				4	2									1			3	3
10%										1						4	5	5
5%											1	5						*3
0		10																0

*One test tube contaminated

Germany Increases the Tariff on Honey

EFFECTIVE January 1, 1930, the Reichstag of Germany increased the duty on honey from 40 to 65 reichsmarks per hundred kilos, or from 4 1/3 to 7 cents per pound. This report has been verified by cable by the United States Bureau of Foreign and Domestic Commerce, so it may be considered official and authentic.

Means Increased Selling Effort

Undoubtedly the new German duties are going to have a depressing effect upon the importation of honey into that country, but just how distressing this is going to be would be hard even to estimate.

Department of Commerce figures show that Germany did not figure largely in our honey exports previous to 1924, when, for the first time, her imports of honey from the United States exceeded a million pounds, reaching nearly two millions. This was followed by imports of two and one-half million pounds in 1925, nearly five million pounds in 1926, over eight million pounds in 1927, nearly seven million pounds in 1928, and a little less than five million pounds for the first eleven months of 1929. No inconsiderable amount.

Noticeable is the rapid increase of exports to Germany following the aggressive work of the Department of Commerce, aided by our own Bee Culture Laboratory in Washington.

While the increase in duty is over 50 per cent, the price of honey to the German consumer will be increased far less than this relative percentage. Assuming that the cost of good white honey (duty included) was, to the German honey handler, in the neighborhood of 15 cents, the cost will now be 17 2/3, or an increase of 20 per cent. By the time the honey reaches the consumer, the increase should not run more than 10 to 15 per cent. This will be a nice increase for the German beekeeper for his home-produced honey, but it will not, surely, kill the German market for American honey.

The Germans are honey users; they have gotten used to the fine white American honeys. Undoubtedly they will want more of them even at the higher price, but we can hardly expect that the volume will be as great as formerly, unless the cumulative effect of the efforts of the Department of Commerce, plus the acquired taste of the German for American honey, are stronger than we can assume.

Without doubt, the added duty will increase the domestic honey price in Germany. It will likely increase the use of substitutes. Perhaps it will be harder on the imports of the darker and lower priced grades of

honey than on the finer white grades, such as that shipped from the intermountain districts.

That it will also cut the consumption of white honey is probable. But to what extent? Half? One-fourth? And isn't it possible that a varying production in this country may have a lot more to do with honey prices than any export figures?

At any rate, fortunate it is that there is coming now, apparently, an awakening on the part of the American beekeeper to this problem of disposing of the honey crop. Like practically all agricultural producers, we spend 95 per cent of our time and efforts on production, with scarcely any effort to proper distribution.

Selling organizations, publicity efforts, and a catering to the fancies of the consumer must be attempted if we are to keep our rank under present conditions of distribution.

Accurate and authoritative information on the actual food and nutritive value of honey, and its dissemination, hold far more prospects to our minds than any avenue. But it must be accurate, and it must be authoritative if it is to take its place beside spinach, the orange, or even the lowly tomato, in the recommended nutrition tables.

Is It a Blessing?

By R. B. Willson

(John G. Paton Co., New York)

For many years the German beekeepers have been agitating for this higher tariff, it being irritating to them that so much honey was being imported into their country to compete with their own small production. Doubtless the manufacturers of artificial honey favored the increase too, for it is included in the act. Although it is not as yet known, it is quite reasonable to assume that since the United States has been the largest exporter of honey to Germany it was not difficult to get the increase approved by the Reichstag because of the threatening high tariff bills now being considered by our own Congress that are designed in many instances to exclude foreign competition in many agricultural products.

This development is one of extreme importance to American beekeeping and may have far-reaching effects, because Germany has been buying approximately eight million pounds of honey from the United States annually since the war. Eight million pounds of honey represents the combined crop of California and New York and the disturbing thought is that the new tariff rate in Germany may result in the exclusion of foreign honeys there.

Probably the new rate of duty will stimulate production of honey in Germany, but this will not be material, because Germany is greatly limited by nature as well as by crops as to the quantity of honey she may produce. Her countrymen are still poor and greatly depressed because of burdens still heavy from the great war, and she therefore cannot be expected to use honey in the same quantities as formerly and pay the increase of the duty.

The question therefore arises: Are we prepared to absorb ourselves, here at home, such a large amount of honey without it hurting the home market? Here is a matter to ponder and worthy the careful study of the best brains in our industry.

Under the circumstances the logical thing to do is to call a halt on increased production and get busy with concerted action on those projects that will tend to increase consumption here at home. I have in mind strong support for the American Honey Institute and the great constructive work that is being done by that organization, and also more financial support for a greater expansion of the honey research work by the Government at Washington.

It may be that Germany's new high tariff will come as a real blessing to us after all. Necessity is the mother of invention, and it may have required something like this to happen to develop our home market, which is our best one, to its fullest possibilities. The present moment, however, is no time to be over optimistic of the future, especially as to market conditions, but on the other hand the situation confronting us is serious and should have the effect of making every beekeeper and beekeeper organization aggressively interested in constructive work that has for its aim increased consumption of honey.

Pacific Coast Opinion on the New German Tariff

By Natt N. Dodge

Pacific Coast beekeepers interested in the exportation of honey have been alarmed over the announcement that the German Government has raised the import duty on honey from approximately 4 1/3 cents per pound to about 7 cents per pound, effective December 31, 1929. The Mountain States Honey Producers' Association, which is the largest exporter of honey from the Pacific Coast, has announced that the new German tariff will not adversely influence export prices, and there will be no price decline in effect. It is

(Continued on page 67)



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Beekeepers' Associations

Why is the number of beekeepers belonging to bee associations so far below the actual number of beekeepers in the country? Evidently the answer is that beekeepers have not yet perceived any great possible profit from associating with one another. Yet the need of association is becoming greater every day. We need to get together to protect ourselves against bee diseases. We need to unite in the selling of honey in order not to compete with each other in its sale. The time will come when beekeepers will shrug their shoulders with astonishment and contempt at the present modes of individual selling, where each beekeeper is placed against his neighbor beekeeper in the selling of his produce to the local dealer.

When will our honey producers understand this thoroughly? How long will it be necessary to urge them to meet in associations as most trades are organized? Friends, think this over and make up your minds to organize. Do not try to join a national association first. But organize locally in districts, in counties, in states, then in a powerful national body. When we do this, we will control the prices of our produce and will make the honey business pay. Besides, we will be able to control the diseases that affect our bees; we will be able to secure our supplies at the lowest possible wholesale price, at the same time enabling the manufacturer to make more money, because he will know better how much he will be able to sell in a given time.

Beekeepers, organize. Attend your conventions. See the beekeepers of Germany, of Switzerland, who meet by hundreds in small communities, hold banquets, visit apiaries in parties, discuss their interests and apply themselves to cooperation. We need to look to foreign countries for some good example, and we need to set such an example ourselves.

What Is In Honey?

It is said that the discovery of vitamins in carrots has increased the demand for that humble vegetable to the extent that gardeners have more than doubled the quantity produced in the last five years. It is reported that more than six million bushels were consumed in 1928. The announcement by recognized authority that any food product contains elements of special value is likely to result in a greatly increased demand.

Beekeepers have long talked of honey as a health sweet and thought of it as especially valuable for certain digestive troubles, but who knows the real truth about it? The greatest need of the hour is properly supervised research to determine the facts about honey. The discovery of important life-giving elements in our product would create an immediate demand for honey that would surprise the old-timers who found it hard to sell a small crop. Such a discovery would probably do more than all the advertising that all the beekeepers have been able to do. The facts should be ascertained.

Specialization

A few years ago if a man kept bees he was a beekeeper and that was about all that could be said of him. Nowadays he has become a specialist and may be either a queen breeder, a live bee shipper, a producer of extracted honey or a producer of comb honey. The tendency in all lines of business during recent years has been more and more toward a narrow specialization, the production of one thing in large volume. Apparently the trend is now setting in in the opposite direction. We see the big concerns, which have been built by specialization, taking on new lines to spread overhead charges over a wider support. The old-time general store was replaced by stores carrying specialized lines, and now these in turn are being replaced by department stores, which offer everything the householder needs. Every generation meets new conditions and must meet them by adopting new methods.

Bees in the Orchard

Great interest has recently been developed in the use of bees for pollination of commercial orchards. That bees are valuable pollinating agents has long been recognized, but the rank and file of fruit growers seemed ignorant or indifferent to that fact. The publication of definite results in several states has aroused the fruit growers to realize that they must have bees to insure a crop under unfavorable weather conditions in spring. The demand thus developed in some localities is in excess of all the bees within reach.

Since fruit growers are not usually familiar with the care of bees, it is desirable that the bee men arrange to provide and care for the bees in the orchards. They are thus supplied with a new source of income and at the same time insure proper care for bees in their neighborhood.

Butter vs. Honey

The writer well remembers the days of his boyhood when butter and honey sold at retail at about the same price per pound. If anything, honey had the best of it by a small margin. Now, after forty years, honey continues to retail at about the same price, or lower, while butter sells at three times the former figure.

The reason is perfectly plain. In the case of honey, substitutes were produced which satisfied the demand and gradually replaced it in the markets. With butter, similar substitutes were produced, but the dairy industry refused to surrender its position. Instead, it organized a far-flung campaign which secured legislation to compel butter substitutes to be sold as such. In addition, a widespread educational campaign was carried on to convince the housewife of the superiority of the natural product. As a result butter held its place and continues to be used more freely than ever. The only reason that oleomargarine did not replace butter generally is because of the organization and educational campaigns of the dairymen.

At the same time the beekeepers were satisfied when the pure food law compelled the seller of glucose to show the fact on the label. There was no similar campaign to educate the public to the superior value of honey. As a result, corn syrup and similar products have largely replaced honey. Whereas forty years ago honey appeared on nearly every table, it is now unknown in many stores. Beekeepers may well take lessons from the dairymen.

Menace of Corn Sugar

There is a very general misunderstanding of the effect of the passage of the so-called corn sugar bill now pending in Congress. It looks very innocent. The important clause reads as follows:

"Nor shall any manufactured or prepared food product be deemed misbranded if such dextrose and/or levulose be used therein as ingredients without declaration on the label of their presence."

On the writer's desk is a jar of syrup labeled "Sugar-Honey," which the label declares to be a mixture of invert sugar and honey. This is very evidently a manufactured product. Should this bill become a law it would not be necessary to declare the presence of the corn sugar on the label, although the presence of the honey must still be made known. In that case the housewife might very readily purchase the product under the impression that she was buying pure honey.

The corn sugar bill is a very real menace to the beekeeping industry, and it is important that beekeepers generally realize how serious the results may be. Much support for the bill is being secured under the representation that it merely permits the use of corn sugar as a sweetening agent in canning, preserving, etc. The matter should be brought to the attention of organizations of all kinds interested in the cause of good government and their opposition to the bill secured.

Shall I Strengthen Weak Colonies With Package Bees in the Spring?

The answer to this question must depend somewhat upon the condition of those weak colonies. A colony which is queenless in spring is almost worthless. It may be saved, but the saving of it consists in supplying it with both bees and a queen.

A very important matter to remember when we unite bees from different sources together is to have them well supplied with food previous to the uniting. Bees are very much like human beings—they are most peaceable when they have a full stomach. If starving bees are united with a colony, they are likely to be driven away. But if they have been fed and have a full stomach, they will be most likely welcomed by the bees of the colony.

In order to succeed best, one must feed both the colony to which the bees are given and the package bees that are brought to them.

Without doubt, there is great advantage in getting bees from the South, especially young bees, to unite with those of our colonies that are too weak. But in addition to feeding them well before they are united, we must make sure that they will welcome the strange queen, whether she is the mother of the colony or the mother of the arriving bees. There must be but one queen in the hive and the bees must be quiet when they are united to the other cluster. A very good way is to place the cage, containing the arriving bees, inside of the hive where the colony is and leave them there a day or so before trying to unite them.

Another matter which needs watching is the possibility of robbing. When we feed bees, unless it is done in the evening, at a time when there are no strange bees on the wing, there is a possibility of robbers sneaking in. This is the worst thing that may happen to a united colony, for robbers cause mistrust among the bees. Look out for robbers.

Something Different

As usual when a publication offers something new the editors are anxious to know what the readers think about it. On page 74 appears a story for the children. The American Bee Journal has published very few stories, very little poetry, and little of anything except such as relates to the business of beekeeping. The children, however, are the object of the solicitude of every parent. We want to give them every advantage which our station in life will permit. The story of the Bee Fairies is an editorial experiment. We want to know

what you think about it. Do your kiddies like it and do you think that there should be more of them? Perhaps you think that the space had best be used with material relating to practical subjects. If so, be sure to tell us. Every editor tries to give his readers the kind of material which he thinks they want, but he can only judge of what is desired from the response he gets from those who have something to say. It is as important that the editor knows what you don't like as what you do.

Trust Folks to Be Honest

Some months ago the Field Editor of this Journal described a roadside stand in northern Minnesota where honey was on sale with no attendant in charge. Passing by, he was surprised to find a sign reading, "Walk in and Help Yourself." There was honey on sale with the price plainly marked. The owner trusted his customers to pay for what they took. In this issue is a description of a similar stand by Robert B. McCain. He also reports that the public is honest and that his customers take the honey and leave the money in payment. This article is decidedly interesting and makes one wonder whether the owner happens to be situated in an unusual locality or whether similar trust would receive similar response everywhere. If any of our readers have had a different experience, we would be glad to hear about it.

The Southern States Conference

We call the attention of our readers to the notice and program in this issue of the Southern States Conference to be held at the Southern Bee Field Station at Baton Rouge on February 26, 27, 28.

This is to be a combined meeting and queen breeders' short course in charge of Dr. W. H. Gates of Louisiana State University. Dr. Gates is himself a genetics expert, an able executive in his university, and should be eminently fitted for the work in hand. All queen breeders able to attend the meetings should reap manifold benefits from the sessions, as well as the informal gatherings held outside.

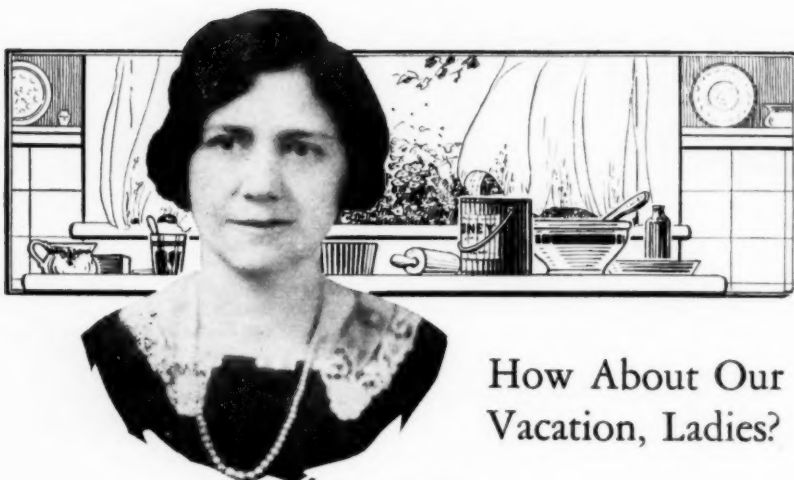
Recommendations of the Southern Field Station for standards in package sizes for shipping bees will be one of the foremost topics. No one can hope that a standard list of packages could be recommended which would be entirely satisfactory to all breeders and shippers. There must necessarily be a spirit of "give and take" in such discussions. To every thinking person, however, it should become apparent that the fixing of such standards is highly desirable, and that the vast amount of work, time, and effort spent on this proposition, by the officials of the field station and outside collaborators, should make the recommendations unusually valuable.

The fact that the express companies are ready and willing also to standardize their shipping regulations shows that it is imperative that such standards be formulated by the shippers and the trained investigators who are acquainted with beekeeping needs, rather than have to accept possible later standards which might be more arbitrarily set.

We can see high value in the 1930 Southern States Conference, and we urge our readers, interested in the subjects on the program, to consider seriously before they give up the opportunity of attending. Particularly is it desirable that all southern states have the queen and package breeders and official representatives in attendance. Such a conference, if it is to do the most good for the industry from year to year, must have wide representation of its constituents.

An Important Meeting

The American Honey Producers' League holds a convention at Milwaukee this month and it is expected that a good attendance will be had. The League is undertaking constructive work for the benefit of the industry as a whole and is entitled to the support of beekeepers generally. Forces are at work which promise great things for our industry with proper assistance.



How About Our Vacation, Ladies?

By Betty Bee

ABOUT this time of year there always seems to be a sort of lull in beekeeping activities. Either our Johns, in their early enthusiasm, have the new supers and comb honey sections well under way and do not apparently need us or they have not as yet caught the spirit of the coming summer and are consequently placidly waiting until swarming time, when we may expect SOS calls at any moment. With us it is too early for spring sewing or housecleaning or gardening, and while, as always with a housewife, there are hundreds of odd jobs to which we might profitably turn our attention, yet these all seem decidedly uninviting and uninteresting.

How about a bit of REST right now?

To remain young—young enough to keep our looks, young enough to be our John's helpmate in every possible way, to be the pride and companion of our youngsters—we must not let our thoughts stagnate, and nothing does this any more quickly than following in the perpetual groove of the family's preferences and opinions. If you could have a rest—a rest to be absolutely yourself, to do just as you wished, to gather your thoughts out of this stagnating rut—how would you spend it?

I asked this question of a very dear friend of mine not long ago, a woman who side by side with her husband in the past twenty-five years amassed far more of this world's goods than the average; whose home and hospitality are the marvels of our community; whose husband takes her off periodically for rest and recreation to Europe or Alaska, South America or Japan, or some other delightful and expensive place. She had said, "Betty, I am so tired," and on the impulse I asked the question. For a moment I thought she was not going to answer; then tears came to her eyes and she said: "My idea of a perfect rest would be to

spend a week in the little three-room house where Ed and I went to house-keeping; to wash the windows and hang the curtains, and scrub the floors, and cook Ed hot cornbread and bacon and have him come in starved to death—and just be myself."

That was the point—"just be myself." Now why not "just be ourselves" a few days during this lull? Time off to do just what we want to do. Tell John and the children you are going to take a vacation, but do not tell them any details. There is adventure in the mystery to both you and them. Plan ahead for it. You need not leave home, though it must be thoroughly understood none of your family are to interfere or to accompany you on your jaunts to freedom. John may at first think you are a bit "off," but you can make him understand. Then when your day comes, lay abed in the morning if you can and want to. If you cannot, bundle the youngsters off to school with a lunch for their dinner; park the baby and John either individually or collectively where they will be properly taken care of, leave all the unnecessary housework until your vacation is over, put on your best clothes—by all means put on your best clothes, for what woman could enjoy a vacation in her second bests?; lock all your family thoughts and worries and problems where they cannot follow you, and leave home! Until time for the children to come home from school, that day is yours. A lunch at some unusual tea room, where you order something you yourself like, something entirely different; visit an old friend with whom you can gossip and forget yourself; go to a movie of your own particular liking; go to a concert or art exhibit, or the library, browsing about among magazines and books you have not had time to read for months; window-shop, perhaps spend

some of your left-over Christmas money, but do not, DO NOT spend it for stockings for the children or gloves for John! Get something for yourself, something frivolous you have long wanted, but never dared quite be silly enough to buy. Get something you have been wishing in your heart of hearts your John would get for you, but never had the courage to suggest. **This is your vacation.** Then home at four to greet the children; more vacation after supper if you can manage, perhaps a new book you have been wanting to read for ages; then another day of rest, and another, and I know from experience you will find yourself thinking strange, new thoughts of happiness and vigor and pep. Indeed there is nothing like keeping our thoughts from stagnating, and I know of nothing better than the fun and adventure of planning on how to spend a three days' vacation all of my own, of disposing of the family and dodging their questions, and of doing and seeing and buying and eating and enjoying my own life in my own way for that brief time.

And to help with your vacation, there are many delicious foods you can easily prepare while washing the breakfast dishes or after your return at four o'clock. For instance:

Chocolate Honey Cake. Rub one-half cup butter and one cup honey together, add one egg well beaten, then one-half cup sour milk. Sift in four cups flour, one teaspoon soda and two tablespoons cocoa. Bake in shallow pan. Serve with sauce made by beating one tablespoon cocoa into one-half cup honey.

Honey Bran Cookies. Blend together two tablespoons butter and one-half cup honey. Add two eggs and beat mixture thoroughly. Sift together one-half teaspoon soda, one and one-half cup flour (it may require a little more). Add to first mixture, then add one cup bran and one-half cup raisins well floured. Drop by teaspoons on buttered tin and bake in moderate oven.

Honey Brown Betty. Put a layer of sliced tart apples in buttered bake dish. Drizzle with tablespoon honey, a dash of cinnamon and a little grated lemon rind. Cover with bread crumbs mixed with melted butter. Alternate layers of seasoned apples and buttered crumbs until dish is filled, having the last layer of crumbs. Bake about one hour. Serve with cream. Use about one-half pint of crumbs to one-half cup of honey and one pint or pint and one-half of sliced apples.

Apple Pimento Salad. Wash, core and cut into small squares six tart red apples. Squeeze over them the juice of one lemon, slightly honey sweetened. Add one diced red pimento. Arrange on lettuce or endive. Whip one-half cup cream, add

one tablespoon honey and pinch of salt. Pour over apple-pimento combination, decorate with chopped nuts and bits of pimento, chill and serve.

Philadelphia Honey Salad. Wash and remove pits from one pound of dates. Fill centers with mixture made by blending one cup cottage cheese and one tablespoon honey. Arrange dates on bed of lettuce leaves, add a spoonful of whipped cream, honey sweetened, garnish with a little shredded cocoanut, chill and serve.

Germany Increases the Tariff on Honey

(Continued from page 63)

pointed out that Germany produced a large crop of honey in 1929, and the action of the Reichstag was taken, no doubt, for the purpose of increasing returns to German honey producers and will result in increased prices to German consumers. This has a tendency to strengthen the honey market not only in Germany, but elsewhere—a benefit in which the American honey producers will participate, not only this year but in years to come.

Anton Lang, of Passion Play Fame, Resigns

Anton Lang, who has long played the part of the Christ (Christ) at the decennial Oberammergau Passion Plays, has resigned from the cast because of his age. His part will be taken by another Lang, though in no way related. The new Christ is, by profession, a beekeeper.

Death of a Pioneer

Albert Vought, born in Delaware, Ohio, in 1857, was one of the oldest subscribers of the American Bee Journal. He moved to Louisiana in 1879. He had about six hundred colonies when, in 1907, the Mississippi overflowed its banks and destroyed most of his bees. He started again, with about thirty-five colonies, and lived near Baton Rouge until his death.

Mr. Vought had a wife and five children, who survive him.

Utah Inspection

Bee men are high in their praise of the Utah State Board of Agriculture for inspection of bees done in 1929 and the elimination of colonies infected with foulbrood or other diseases. Due to the activity of the state board, the year 1930 finds few foulbrood cases in Utah. The outlook is bright for a good crop of honey, apiarists report. G. P.



DR. H. E. BARNARD, PRESIDENT

E. C. Judson, secretary-treasurer Wyoming Beekeepers' Association, writes the Institute as follows:

"Nearly every beekeeper attending our recent convention pledged themselves to give one-half of one per cent of their gross honey crop for 1930 to be used in a national advertising campaign and turned over to the American Honey Institute for them to use as they see fit."

Action like this is certainly cheerful. The support of other associations which has become apparent this fall adds still more to the hopefulness of better distribution of the Institute's influence in the future. Wisconsin has voted support, Illinois has voted support, and we hope that other associations will follow the lead of these and that individual beekeepers may perhaps be persuaded that their own best interests can be served by national cooperative and concerted effort such as that now being carried on by the American Honey Institute and the American Honey Producers' League.

The Michigan Beekeepers' Association has voted to contribute to the Institute on the basis of \$1.00 per ton of honey. Somewhere around \$400.00 was subscribed at the meeting of only about fifty people. Secretary Kelty thinks that it will probably reach \$1,000.00.

Number of Food Manufacturers Preferring Honey Grows

William H. Riecken, president of the California Figeo Company, which blends sun-dried, unsulphured figs and barley and malt for use as a breakfast beverage, writes that they are interested in the use of honey as a sweetening agency. He adds that every employee of the company receives a bonus check in a fancy jar of honey as a Christmas present.

Gold Medal Christmas Recipe Calls for Honey

Betty Crocker's Gold Medal "Kitchen-tested" recipe circular for December contained the German Christmas cookie recipe—Nurnberger Lebkuchen. This circular was enclosed in every sack of Gold Medal flour, and among other holiday suggestions was the one for this popular Christmas cookie calling for a cup of honey.

Betty Crocker is one of the popular household chat hour directors, and the Institute is in direct touch

with her as well as other Washburn-Crosby workers. The Institute will follow up her work to see if honey recipes cannot be included in some of her 1930 broadcasts.

The Institute Meets with the National Convention

A meeting of the American Honey Institute is to be held in connection with the national convention of the American Honey Producers' League, Bee Industries Association, and Apiary Inspectors' meeting at Milwaukee on February 3, 4, 5 and 6. Come and talk it over with us.

Foreign Countries Interested in the Institute

Requests are coming for material from the Institute from Canada, Australia and from England.

Miss Portia Geach, president of the Housewives' Progressive Association in Sydney, Australia, has asked for material for the six thousand members of her club. Of course, we have taken care of her.

Start Like a Lion—End Like a Lamb

I have been a chaser of the bees for thirty-two years this June. Had many a "crick" in my neck from looking up in the woods at knot-holes. The first colony we got placed in our garden was almost as big a problem and a bigger dread than if it had been a lion tied out there. We found a number of bee trees, that same season. I helped cut them. The tree colonies, being hived late in log gums, didn't last.

One natural colony, a purchased swarm, hived in too large a home, didn't survive the winter. Another tree colony taken the following summer died the next spring.

Were we discouraged? No; bought another colony, caught one from a bush, and how happy we were in the spring to see our pets go ahead with their housekeeping. They gave up our first surplus the second June after their being hived. To be exact, it was three years and three days from our first purchase till the day we got to eat honey from our own bees. No honey since nor before ever tasted so good.

B. I. Blankenship,
Kentucky.

MEETINGS AND EVENTS

Current association meetings and organization notices are published in this department each month. Secretaries and other officers of organizations who wish publicity here should make sure that notices are sent in before the fifteenth of the month preceding publication. Frequently notices are received too late for use and consequently do not appear at all.

League Program at Milwaukee, February 4, 5 and 6

The official headquarters will be at the Hotel Schroeder. It was previously announced that it would be at the Hotel Wisconsin, but this has been changed to the Hotel Schroeder. Accommodations for the beekeepers will be at both hotels. Rooms at the Schroeder range in price from \$3.00 to \$7.00; at the Wisconsin, from \$1.50 per day, up.

Meetings will be in one section of the Lorraine Room of the Hotel Schroeder, and the honey exhibit will be in an adjoining section. Arrangements for prizes are being made, and it is hoped that a number of exhibits will be sent in from outside states. Ribbons will be awarded and an effort is being made to provide some cash prizes.

The Wisconsin State Beekeepers' Association and the Convention Bureau of the Milwaukee Association of Commerce are cooperating to make this a highly successful meeting. Sessions will run from Monday, February 3, to the afternoon of Thursday, February 6.

The program summary is as follows: On Monday there will be meetings of the American Honey Institute and Apiary Inspectors of America, and arrangements for the third national honey exhibit held in conjunction with this meeting.

Registration begins Tuesday morning at 8 o'clock, followed by the president's address, Dr. M. C. Tanquary, and report of the secretary-treasurer, J. A. Munro; committee reports, and the following discussions: Support of the American Honey Institute, by L. C. Dadant, secretary-treasurer; Trade Association and the American Honey Institute, by Lewis Parks, president Bee Industries Association; the Beekeepers' Need of a National Organization, by Francis Jager; Organizing a Food Industry, by H. E. Barnard, president American Honey Institute; the Latest Information in Regard to the Nutrition of Honey, by Miss Mary I. Barber, director of home economics of the Kellogg Company; the Moisture Content of Honey During the Extracting Period, by H. F. Wilson; Increasing the Distribution of Honey, by Harold J. Clay, Bureau of Agricultural Economics; White House Conference Relating to New Ideas on Nutrition and Child Feeding, by Dr. H. E. Bernard; the Possibilities of Honey in the Field of Nutrition, by Dr. F. W. Schultz, University of Minnesota.

On Wednesday: Working with Beekeepers, by O. A. Lende, Mountain States Honey Producers' Association; Relationship Between the Beekeeper and the Bottler, by J. P. Thomy, president Preserves and Honey; the Point of View of the Buyer, Bottler and Jobber of Honey, by C. W. Aeppeler; the Use of United States Standard Grades, by James I. Hambleton, Bee Culture Laboratory, Washington; How Ontario Markets Its Honey, by William A. Weir, secretary, Ontario Honey Producers' Association; Discussion led by W. F. Krouse, president, Ontario Honey Producers' Association; Cooperative Marketing in the South, by J. V. Ormond, Arkansas; Grading and Packaging Honey, by H. A. Mark, manager Nebraska Honey Producers' Association; How the Pool System Works in Cooperative Marketing, by A. W. B. Kjosness, general manager Mountain States Honey Producers' Association; Retailing and Consumer's Demand for Honey, by Dr. M. P. Rasmussen, Cornell University; Honey Helpings, by Malitta D. Fischer, American Honey Institute; Beekeepers' banquet and program of entertainment at 6:15 Wednesday night at Hotel Schroeder.

On Thursday: Registration of Beekeepers, by F. E. Millen, Ontario; the Package Bee Business, by T. W. Burleson, Texas; the Relation of Beekeeping to Horticulture in Michigan, by Russell H. Keltz; Honey House Inspection, by Floyd Buck, Washington, followed by committee meetings.

Last Call for the Southern States Conference at Baton Rouge February 26, 27, 28

This meeting will be in the Agricultural Building of the new university, the same building that houses the Southern Bee Culture Field Station. Prof. William H. Gates, head of the Department of Zoology, is in charge of the program arrangements and also conducts the queen breeders' short course held in conjunction with this meeting. Professor Stabe, Dr. Rosewall, and Dr. Whitcomb (in charge of the station) are all helping, so the short course will be worth the trip.

Following are some who will appear on the program: Professor Rose-

wall, secretary of the Louisiana State Association; Professor Stabe, former secretary; Dr. Whitcomb, in charge of the Southern Field Station, and W. E. Anderson, Louisiana State Entomologist, in charge of apiary inspection and president of the conference.

E. G. LeSturgeon, editor of the "Beekeepers' Item," and W. E. Joor, former president of the Conference, are expected. These, with Mr. Ben Soloman (A. I. Root Company man from San Antonio, Texas), are motoring over. Anyone who has ever had the pleasure of meeting any one of this trio knows the treat in store for them. In addition, Dr. E. F. Phillips, of Cornell University, will tell us something of "Bees and Pollination." This will certainly be of interest to package shippers. Someone will undoubtedly be on hand from the American Bee Journal staff. Young Harry Laidlaw, at present with the southern station, will also be present. Mr. Robert Foster, State Inspector of Florida, has promised to come, and J. J. Wilder, of "Dixie Beekeeper."

Morley Pettit, well-known Canadian beekeeper and also well known in the South, will speak. It is hoped also that Mr. Lloyd Watson, who has led the way in the field of instrumental insemination of queens, will be able to attend. Dr. Barnard, of the American Honey Institute, will be with us unless something unforeseen happens before the time of the meetings. Mr. Gehrels, the beekeeper who knows European honey markets better than any man in the South, also plans to attend the meetings. In addition, practically every state beekeepers' organization has appointed one or more delegates to represent them.

The Immediate Past Value of the Conference

The Conference was organized primarily for two purposes: first, to secure a Federal branch laboratory for the South, and, second, to support this laboratory once it was established. It has succeeded in both of these purposes. One of the first demands was for "standardization of shipping cages or packages." This work was taken up immediately after the station was established and as soon as Dr. Whitcomb could begin a survey. At the last Conference a committee with the writer as chairman, and with each state delegation electing its own representative, discussed with Dr. Whitcomb and Chief James I. Hambleton of Washington, D. C., a definite working plan. The labor of working out recommendations for standardization of packages was evolved on the Southern Field Station. Those recommendations are now complete and will be submitted to this meeting, together with a re-

port of how they were arrived at. These recommendations cover five typewritten pages, and the report sixteen pages. (A copy of both are before me as I write this.) Besides exhaustive study and correspondence, every shipper that could be personally visited was interviewed; a trip, and three distinct types of questionnaires were sent out to both buyers and producers of packages.

I was not enthusiastic over package standardization. My twenty years of experience in package producing and shipping made me skeptical of the problem and I doubted it ever being accomplished, and especially in such a short time. I have gone over both the report and recommendations and am astonished at the amount of work that has been done and at what has been accomplished. The recommendations are as fair to every type of shipper as they could possibly be, and the report of the "reasons why" are absolutely above criticism. Very few outside of this immediate work will realize the immensity of Dr. Whitcomb's problems. I will not comment on the details, as these shall be reported at the Conference.

This is barely the beginning of the work of this station. Breeding, color, and other investigations in shipping bees will be worked out impartially by Federal men. This report and recommendations are by no means the end. Many details will have to be settled by actual experimentation, but a tremendous hill has been climbed.

The Immediate Future

I deliberately chose the title "The Last Call" for this article. This makes the second meeting held in Louisiana at Baton Rouge at the new university and under the immediate auspices of Louisiana men. We have been proud of this honor and glad to be of service, but we feel most keenly that for this to be a truly Southern States Beekeeping Conference it must be officiated by men from different southern states, and also that the meetings must be distributed to various points to keep up interest. We want to see men from other states also take this interest and assume those responsibilities, and we of Louisiana **want to cooperate with them in this work.**

I mentioned some of the problems this station is working on, but perhaps another section has different problems. Bring them to the meeting with you. Also remember that one of the same reasons for the organization of the Conference still exists, "support the Southern Bee Culture Station."

Two more reasons for the Conference loom largely on the horizon: first, a getting together in the South of the buyers and shippers of pack- (Continued on page 87)

Doings in the Northwest

By N. N. Dodge

Washington Food and Drug Department Scans Labels and Import Honey

Considerable interest is being displayed by Northwest beekeepers in the activities of the Washington State Department of Pure Foods and Drugs regarding honey. Mr. Ira Case, director of the department, has been investigating the honey labels used by commercial honey packers and also by beekeepers who market their own product, and declares many of these labels to be misleading in the impression which they make upon the general public. Mr. Case and his associate, Mr. V. H. Robinson, are also making a study of Hawaiian honey with the idea of preventing the use of such of this honey as contains large quantities of honeydew, for table honey trade. At its convention in December, the Washington State Beekeepers' Association expressed its approval of the work of the department in enforcing state and national laws regarding honey.

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Mountain States Annual Meeting at Boise

At its annual meeting of members at Boise, Idaho, December 9 and 10, the Mountain States Honey Producers' Association elected the following officers: President, Ralph Smith, Amenia, North Dakota; first vice-president, R. T. Rhees, Ogden, Utah; second vice-president, Charles



Ralph Smith, North Dakota, former Director and new President of Mountain States Honey Producers' Association.

Brittain, Seattle, Washington; third vice-president, A. W. B. Kjosness, Boise, Idaho. Aside from Mr. Kjosness, these officers are the directors from their respective states. Directors from the other states districted by the Association are as follows: J. Fitzgerald, Lodgegrass, Montana; C. W. Nelson, Vale, Oregon; William Mosteller, Casper, Wyoming; Frank Beach, Burley, Idaho, and Roy Rabbitt, Caldwell, Idaho. More than two hundred persons were present at the meeting, which was not adjourned until after midnight, December 9, due to the press of business. On the following day the Board of Directors held its meeting. The by-laws were amended to enable the Association to cooperate more fully with the Federal Farm Board. The membership gave to Manager Kjosness a rising vote of thanks for his work in connection with the Association's loan from the Farm Board and the load in transit and storage in transit privileges obtained from the railroads.

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Mountain States Cooperative Obtains Privilege of Loading and Storing in Transit

Striking at a most propitious moment immediately following President Hoover's request that railroad lines make every possible effort to assist agricultural organizations in an attempt to maintain healthy business conditions, the Mountain States Honey Producers' Association obtained from all western trunk lines loading in transit and storage in transit privileges. These concessions will enable producers having less than car lot crops to place their honey at shipping points to be picked up by partly filled cars. Cars loaded in this manner will be handled by the railroads on the same basis as cars filled at one shipping point, the lower freight made possible by the carload rating thus obtained making a considerable saving to the producer. Carloads of honey destined for distant markets may be unloaded, their contents stored in a warehouse at some intermediate point, and later re-shipped to the original destination with the same rating as a car going directly from shipping point to destination. Association officials state that this privilege will mean an immense saving to members.

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Wing of California Visits the North

Mr. J. E. Wing, widely known queen and package bee man of Cottonwood, California, made a trip north through Oregon and Washing- (Continued on page 89)

The Water Supply Within the Hive in Spring

An Experiment and Its Result

By Arthur Ratz, Jena-Lobstedt, Germany

(Translated from the original in "Die Deutsche Bienenzucht," April, 1929, by Annie D. Betts)

THE necessity for providing water for the bees in spring is well known, but has not everywhere been considered as important. My apiary, where these observations were made, lies in a well sheltered position between a gentle hill and a row of farm buildings. About forty-four yards away in the direction of flight is a stream which, before the experiments, served the bees as a source of water.

In spite of the short distance, however, I used to lose hundreds of the eager water carriers in March and April, since, in flying out of the sheltered corner across the unprotected road to the stream, they were thrown to the ground. The cool spring water was also too cold for the bees. At that season every bee "is worth three." Therefore, I made a drinking place in front of the bee house—such a one as is everywhere described.

About four years ago I heard from a beekeeper that a feeder in the side-wall of the hive (a type used in some German hives—Tr.) was not only a good feeder, but also an excellent indoor drinking place. Since then experiments have convinced me that this is so.

The Basis of the Experiment

1. Several publications contain reports on the consumption of water by colonies of bees during the period of development. In almost all cases the water was given above the brood nest. Preuss gave water by a particularly ingenious arrangement, which, however, laid his experiments open to the criticism that the bees found the water an annoyance. They did not use the large quantities that were measured, but carried much of it out of the hive as something that did not belong there. I do not think this can be said of water given in the side wall feeder, for this does not come into immediate contact with the combs occupied by the bees, yet it is always within their reach. (A Doolittle division board feeder might do.—Ed.)

2. The watering experiments in 1926 extended to all colonies in the apiary, but the measurements were incomplete. All colonies were watered in 1927 also, and the water consumption accurately measured. In 1928 only five colonies received water (numbers 1 to 5). In Diagram C the fifteen colonies were chosen from among those for which comparison figures from 1926 and 1927 were available.

3. The experiments were made as follows: From the beginning of the last week in February on, every colony received in its side wall feeder 399 ccm. of warm water. Every Saturday evening the amount of water was measured in a cylindrical measure, the consumption noted, the remaining water removed and 300 ccm. of fresh water were put in. From the middle of March on, the weekly supply had to be increased to 500 ccm. (500 ccm. amount to a little more than a half quart—Editor); from the beginning of April to 750 ccm. During the last week of the experiment the feeder was filled and measured twice a week. The feeders only held about 900 ccm.) Finally the feeders were filled daily.

4. The measurements in 1927 were designed only to determine the amount of water used. In 1928 only numbers 1 to 5 received water, to find if there was any difference in yield that might exist between watered colonies and not watered colonies. Further, numbers 6 and 7 had water in their feeders, but their access to it was barred by wire gauze, to determine the loss by evaporation.

5. The measurements (but not the watering) were concluded when no further rise in consumption was noted. That was about the middle of June.

Results

1. **Consumption of water** (see Diagrams A and B). This varies with the size of the brood nest, or, more accurately, with the number of larvae requiring pollen and brood food. The more bees there are, the larger the demand for water. In addition, a portion is used to dissolve hard winter stores, as long as these are present. The consumption is at first greater in the feeders that lie between two warm colonies than in No. 1, whose hive stands against a cold outside wall. When warmer weather comes, an increased consumption by this colony is observed also. The water in the feeders shows nearly always a temperature of 15 up to 20 degrees C. (59 to 68 degrees F.).

In the first few weeks the consumption is small, up to 500 ccm. From the beginning of April on, it increases very fast, and continues to rise until the first third of June, except for recurrences of cold weather, which cause some interruption.

The highest weekly consumption was 2.4 litres (over four pints), measured at the beginning of June,

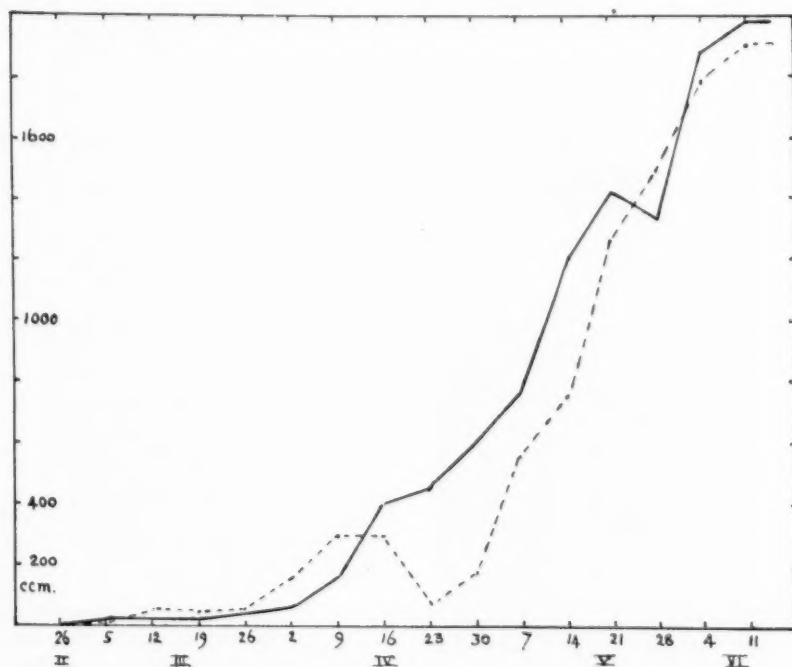


Diagram A. Weekly water consumption in inside watered colonies. Solid line, fifteen colonies in 1927; dotted line, four colonies in 1928. All observations were made on Saturdays, and this day fell two days earlier in 1928. The numbers indicate days of the month; the Roman numerals show the months, beginning in February.

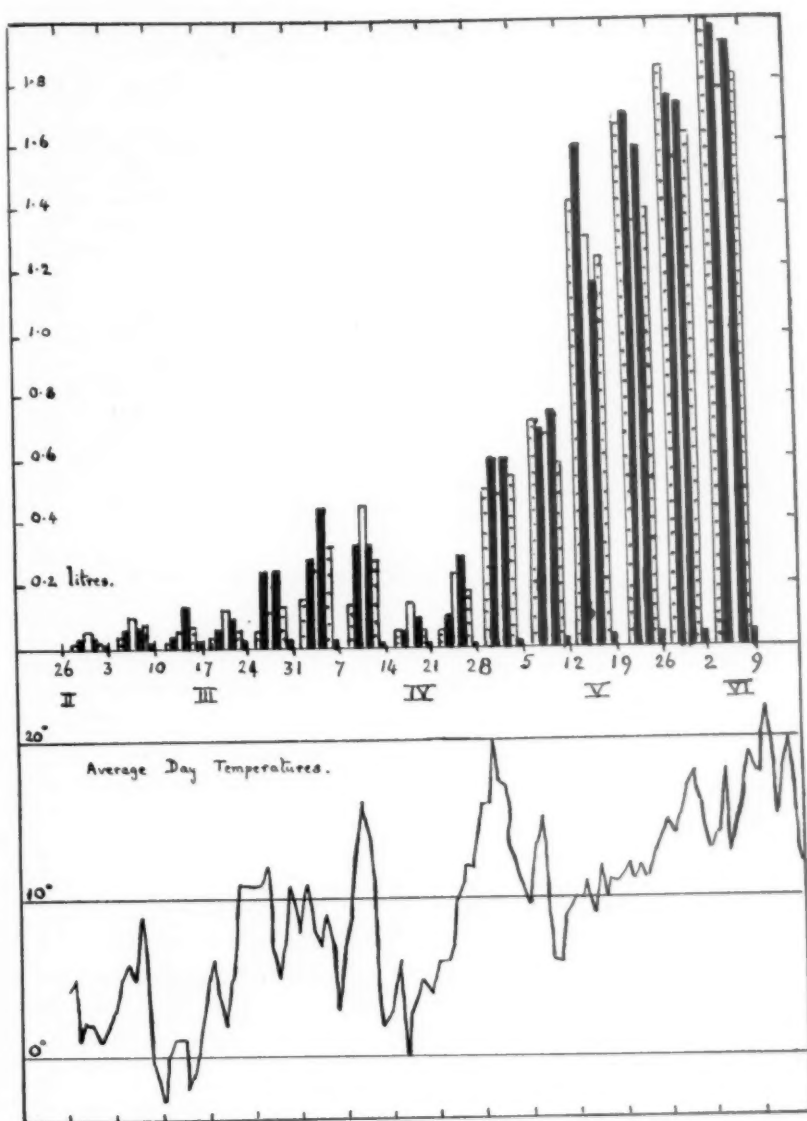


Diagram B. The five first high columns in the upper chart give the water consumption of colonies 1-5, weekly, during 1928. The smaller column, at the right, gives the vaporization in colonies 6-7. The Roman figures below this chart are for the months and the numbers for the days. The lower chart gives the mean daily temperature for the same period.

1927, in one separate colony. The quantities visible in the diagram do not appear, however, to give quite all the actual water demand, for on fine days, in spite of the indoor drinking place, a few bees were still fetching water from the stream.

The consumption in numbers 1 to 5 between February 26 and June 9, 1928, was (in order) 8.1, 9.2, 8.7, 9.5, 8.2 litres (average 2.3 U. S. gall.). In the week between the ninth and sixteenth of June, the daily consumption of these five colonies in order was on the average 290, 270, 250, and 240 ccm. The loss by evaporation is always included in the figures given. This, however, so small that it is scarcely of any importance. During the whole fifteen weeks of the experiments it amounted in numbers 6 and 7 to a mean of 350 ccm. for each colony (a full one-third litre, about 0.6 pint). In

the weeks with small consumption the loss by evaporation constitutes a larger percentage, mostly 20 to 30 per cent; later, when the consumption is highest, it amounts only to 2½ to 3 per cent.

2. Water consumption and weather.

The weather influences the consumption of water considerably, especially in March and April. I have given under Diagram B a curve which shows the daily average temperature during the same time. The relation is plain.

After a certain fluctuation, but yet constant rise in temperature up to an average day temperature of 16° C. on the tenth of April, there came a sudden fall, which lasted into the following week and affected the water consumption, not only during this week but during the next week. A further fall of temperature at the beginning of May was not able to cause the colonies to reduce their development, but it strongly hindered the steep upward movement that had begun. Consumption in the week from the fifth to the twelfth of May should have been appreciably higher.

Another point is worthy of notice, which is not quite clearly seen from the diagram, because the consumption is recorded by weeks instead of by days. If sudden cold comes after warm days, scarcely any diminution of consumption is noticeable on the first, second or third days following, as several experimental measurements showed. Decrease generally becomes evident only from the fourth day on, probably because the queen was influenced in her egg laying by the cold which occurred three or four days before.

The color of the hive in conjunction with the rays of the sun also exercises an influence on the rate of breeding and also on the consumption of water. For instance, the colonies in hives painted dark brown

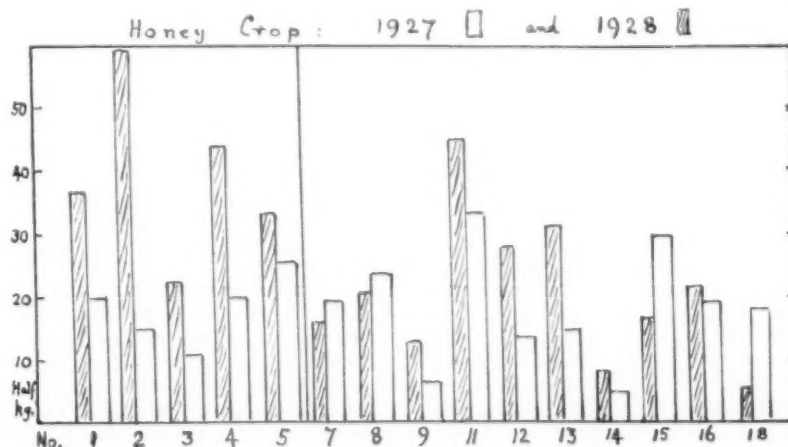


Diagram C. The honey crop of fifteen colonies in 1928 (black column) and in 1927 (lined columns). In 1927 all the colonies were watered inside the hive. In 1928 only colonies 1-5 were watered.

had a surprisingly large consumption following days of sunshine (see B, fifth, sixth and tenth weeks, numbers 2 and 4). But they also go back seriously when the weather is poor. (Fourth and eighth weeks.) On the other hand, white hives are the least influenced (see No. 3, the middle white column). This will be clear to anyone who has noticed the different temperature between a white and a dark painted hive when the sun shines on them.

3. **Watering and honey crop.** In 1927 all the colonies were watered, in 1928 only Nos. 1 to 5, to determine if there was any difference in the crop. The result was surprising. Looking at diagram we are struck by the much more even crop of 1927 as compared with 1928. In 1927, Nos. 1 to 5 together produced 92 pounds. In 1927, the other ten control colonies gave 184 pounds. In 1928 these same five colonies gave 190 pounds; the other ten gave 205 pounds, an average of 38 pounds for the first and 20½ pounds for the others.

We must note that the conditions of flow were better in 1928 than in 1927, and that in 1928 colonies Nos. 11, 12 and 13 were strengthened in spring with material from other colonies. This must have raised the average of the other ten control colonies.

It would seem, then, that colonies that are watered in the hive yield more than others. If a number of conditions contributed to this result, there is no single important factor to account for the difference except watering. How can it be explained?

In the first place, the indoor water supply protects the bees from serious losses. The lives of many water carriers are saved that otherwise would fall a victim to cold blasts of wind and April showers. In the spring, especially, old bees are very valuable for rearing young foragers. Preserving hundreds of old bees may, therefore, mean producing a thousand more young ones.

Secondly, we relieve the bees of a great part of the work and many are set free to do other things. A few are enough to supply the demand for water out of the feeder, and these are also occupied thus at night. According to Zander, the honey sac holds 14 to 16 ccm. In order to carry home one ccm. of water, sixty-five to seventy flights are necessary. With an average weekly demand of 500 ccm. in April, therefore, 30,000 to 35,000 flights must be made. For an average weekly demand of 1.21 litres in May we have to reckon with 80,000 to 90,000 flights, and in June with 130,000 to 150,000 flights—that is, about 29,000 flights a day. (A water carrier takes a larger load than Zander supposed. I have reason to think that it is from 20 to 50 ccm., or even more, according to the tem-

perature. This will, however, only slightly modify the force of Herr Ratz's argument.—A. D. B.)

This presupposes, of course, that every water carrier is fully laden. Whether she pumps her honey sac full of cold water every time out there at the stream or returns home with half a load is not certain. If she returns home only partially loaded, however, the figures would be considerably greater. The conclusion is, therefore, reached that to water bees in their hives means to save the lives of many, to spare them a great part of their work—to increase one's honey crop. The simplest watering appliance is, in my opinion, the side wall feeder, which can be built into any hive.

Harboring vs. Eradication

By E. G. Carr

On page 400 of the 1928 American Bee Journal, Mr. Jay Smith took occasion to differ from me in the belief that American foulbrood can be eliminated just as soon as we decide to do so.

My statement is based on personal experience and the experience of others which I have observed. I assume Mr. Smith's statement is also from his personal experience.

Let me cite one of many similar experiences which have come under my observation in New Jersey—experiences on which I base my statement regarding the eradication of American foulbrood.

An apiary of forty-two colonies of bees was examined during the latter part of the season and found free from American foulbrood. This apiary was sold with the understanding that it could remain where it was then located until spring. When it was moved in the spring (a distance of half a mile or less), it was examined and fourteen cases of American foulbrood found. An apiary of five colonies just across the road from the former location had died and been robbed out. An examination showed the combs filled with American foulbrood scales.

The fourteen colonies were shaken onto foundation just before dark, the beeless brood taken to the owner's garden, four miles away, and burned in a pit. The hive bodies, tops and bottoms were flamed with a gasoline torch and put into service at that apiary. That was four years ago, and no American foulbrood has been seen in that apiary since. I cannot see that there was anything difficult or complicated in this procedure, which resulted in the eradication of American foulbrood from that apiary.

Based on this and similar experiences, I say American foulbrood can be eliminated. It is only necessary

to apply similar treatment to all infected apiaries and the job is done.

If American foulbrood cannot be eliminated, as Mr. Smith claims, I cannot see that he can reasonably advocate the expenditure of more money in the effort. Why not let it run and clean out those not sufficiently interested to give proper attention to it and let those who think they can live with it do as they please about control.

I cannot feel that anyone realizes the seriousness of American foulbrood when he lets infected colonies produce surplus honey and extracts and broadcasts such honey.

Neither can I agree that anyone is "expert in handling American foulbrood" who says he "never expects to get rid of disease."

My experience as inspector has led me to give more attention to the beekeeper who is enthusiastically accusing his neighbor beekeepers and rocks and trees of giving his bees American foulbrood.

Yes, Jay, it takes psychology, but it also takes a whole heap of painstaking effort and some expense, but it can be done, and it is worth both. Better get in line.

Just so long as those who are looked upon as leaders talk and act against eradication, just to that extent are the procrastinators encouraged.

San Bernardino Bee Men Raise Question of Diseased Honey

Resolution: Whereas, the state of California is annually spending no less than \$50,000 for the eradication of American foulbrood; and whereas the burning of American foulbrood colonies has reduced this disease to a point which brings complete eradication within reach; and whereas it is recognized that this goal cannot be reached while diseased honey from other states is allowed to enter and be distributed in our markets,

Now, therefore, be it resolved, That the beekeepers of **San Bernardino County, State of California**, call this matter to the attention of the Apiary Inspection Committee of the Western Plant Quarantine Board and seek their counsel with a view to finding a satisfactory solution to this pressing problem, and that copies be sent to the following:

California State Beekeepers' Association.

California State Department of Agriculture.

Mountain States Honey Association.

American Bee Journal.

Western Honey Bee.

Mr. George Schweiss, State Entomologist, Reno, Nevada.

Ivan V. Knarr, Secretary.

Beekkeepers Should Prepare to Help the Census Takers

In the decennial census of the United States, which is to be taken beginning April 1, the beekeeping industry will have the best opportunity it has ever had to find out something about itself, says J. I. Hambleton, apiculturist in charge of the bee culture division of the Bureau of Entomology, U. S. Department of Agriculture.

"State and county beekeeping organizations, and even individual beekeepers, realizing the necessity for having reliable information on bees and honey, should cooperate to the fullest possible extent in the taking of the 1930 census," says Mr. Hambleton.

"This probably will be one of the most important items of business, if not the most important, to come before the beekeeping industry in the next ten years.

"Beekeeping has changed greatly in the last ten years. This is due largely to the fact that many large commercial beekeepers now reside in towns and villages or metropolitan areas of the larger cities, sometimes far away from their bees.

"Quite obviously the farm owner who leases to an urban beekeeper a small piece of ground, in some out-of-the-way place on the back end of his farm, is not expected to know, particularly if he is not a beekeeper himself, the number of colonies or the quantity of honey produced, and cannot be expected to give the census enumerator the best kind of an answer as to the number of colonies and the pounds of honey produced by bees that are not his own. In the past the farm schedule has been the only schedule in the census asking questions on bees and honey, and the owner of bees living any place but on a farm or range was missed. It is very difficult to estimate just how inadequate have been the figures on bees and honey in the past census reports.

"The Bureau of the Census has agreed to put on all farm schedules two questions on bees and honey, under the heading 'Bees, April 1, 1930, and honey produced, 1929.' The two questions are: 'Question 120—Hives of bees owned or managed by you on this farm or elsewhere, number—' 'Question 121—Honey produced 1929, pounds—' These questions should very adequately take care of all bees owned by farmers who reside on their own places, as well as of bees owned by tenants or by anyone occupying a farm. However, these questions will not take care of the bees that are now on farms but owned or managed by the urban dweller, and so, in order that

these too may be included in the census figures, the Bureau of the Census has consented to insert two other similar questions on the schedule pertaining to livestock not on farms or ranges.

"Before agreeing to the manner in which the two questions concerning bees and honey were to be stated in the farm schedule, and to the insertion of the two questions concerning bees and honey in the schedule devoted to livestock not on the farms or ranges, the Bureau of the Census had to give the matter very careful consideration, because every agricultural industry in the country, and every large manufacturing organization as well, was bombarding the bureau with requests to have figures collected on matters in which they were particularly interested. Naturally enough there is a limit to the number of questions that can be asked, so the insertion of the two new questions to catch the bees owned by city dwellers, and the improvement of the questions in the farm schedule, is an important victory to the beekeeping industry.

"If reliable figures are not collected in 1930, it will mean that the industry must wait another ten years. In the meantime it would have to continue making efforts to improve the distribution and marketing of honey without knowing where or how much honey is produced. In other words, the industry would have to continue running as a small concern too insignificant even to warrant keeping account books.

"The full responsibility for collecting reliable figures cannot be placed upon the Bureau of the Census and its thousands of helpers who will take the census. Census enumerators are paid on the basis of the number of farms or places enumerated and the number of persons enumerated. Naturally enough the enumerators are not going to ask every town and city dweller, or perhaps even every farm dweller, whether he keeps bees. Unless the enumerator feels reasonably sure of an affirmative answer, he will not take the trouble to inquire whether a man has bees or not.

"This method of enumerating might at first thought be subject to criticism, but from the standpoint of financial efficiency it is perhaps the best method that could be used. The mere fact that the method does contain a weak point, notwithstanding that it may be the very best method to employ, immediately suggests the need for cooperation with the enumerators, if reliable and com-

plete figures are to be obtained on bees and honey.

"Ordinarily local people are chosen as enumerators, persons who are well acquainted with the conditions in their particular territory, and who also know the people in the district. In the rural sections the enumerator probably will have a more intimate knowledge of both persons and conditions than will an enumerator in the city. However, whether the matter concerns the enumerator in the city or the farm enumerator, individual beekeepers and beekeeping organizations should make it a point to find out who the enumerators are in their territories and furnish them with a list of beekeepers, or point out to them sections of the country where beekeeping is of importance. With such help, and with an advance list of all beekeepers in his territory, the enumerator will make it a point to ask all people concerned about their bees. The personal character of the enumerators is such that it will be found that most of them will take considerable pride in the manner in which they attend to this important business."

Introduction of Queen by Water

"It was, I think, in Sussex, that a beekeeper conceived the idea of immersing the queen in a matchbox full of water. This procedure invariably produces the happiest results: 'Good Heavens!' buzz the agitated workers. 'What an indignity!' And they hasten, without more ado, to desiccate the saturated monarch, by massage, by brushing her with their feet, and by fanning her with their wings, with more than electric rapidity.

"And by the time that these Samaritan efforts have done their work and the queen is as dry as a bone, the bees have forgotten that she ever exhaled an alien aroma."—British Bee Journal.

The Apis Club

Our German friends have published a pamphlet entitled "Salve Apis-Club," describing the meeting held August 9-12, in Berlin, of the International Apis Club. It contains sixteen pages, with twelve photos and a list of the 291 people who attended the meeting. It makes one wish to have been there. It is to be regretted that we cannot all understand English, French, and German, as does Miss Nora Baldensperger, who did the translating of the addresses as given. Miss Nora is the daughter of our old friend Ph. J. Baldensperger, who speaks several languages himself.



The Adventures of the Bee Fairies

By Aunt Laura

"A STORY! a story!" cried the children as Aunt Laura came along the path from the apiary into the garden and dropped down on the grass beside the playhouse.

"Something about fairies," cried Mildred.

"No, make it about robbers and flying," interrupted Dickey.

"Children," suggested Doris May. "Something to eat," added Robert, who is always hungry.

"But you promised me some of your tea party," laughed Aunt Laura, removing her bee veil.

"We waited for you, auntie dear, really we did, but we do want another story," said Mildred in her grown-up way, as she drew the little table out of the playhouse and prepared to set it.

"You are always wanting stories. Will you ever hear enough? I am sure I have told you stories to fill a big book; but let me think. Perhaps way back somewhere in my head I may find just one more worth the telling," replied their aunt, gazing dreamily at the far-away horizon where the blue sky with its fleecy summer clouds met the indistinct outlines of the distant woodlands.

So, as the boys hovered impatiently near, the little girls set the table and with true housewifely care spread out the "goodies" Grandma had prepared for them and poured the lemonade from the thermos bottle into the small cups. Aunt Laura sat thinking. Then she cried, "I believe I have it—a story for you all, about robbers and flying, fairies and children, and, for Robert's sake, something to eat!"

"Goodie, goodie!" cried all the children. "Will you tell it now or shall we eat first?"

"We will eat now. Then you shall have the story."

So, as the soft summer breezes stirred the leaves of the arbor and the bees from Aunt Laura's nearby apiary lugged in their precious harvest, the little cakes and honey sandwiches were enjoyed and, after the tea things were neatly tucked away in the lunch basket and order re-

stored in the playhouse, the children eagerly gathered about her.

Aunt Laura thoughtfully picked a crumb or two of honey sandwich from her gown and placed it on her hand invitingly. The children waited breathlessly. What sort of story was this to be, they wondered.

Then a bee, one of her own, probably, paused, circled inquiringly about the outstretched hand, hesitated, then alighted for further investigation. Daintily and politely the bee tasted, tasted again, then remained to enjoy. Speaking ever so softly, Aunt Laura began:

"If we are very, very still, perhaps we can get this bee to tell us a story; at least we can play she is telling it to us. Let us pretend she is talking to us. Let us pretend she is saying, 'Ah, this is truly delicious honey. It is probably some we ourselves gathered last season. I am glad you put it here for me. I shall just sit here a few moments to refresh myself, then really I must go on with my work.'

"I understand you children want a story about fairies and robbers, flying and children, something to eat. I am the very one to tell just such a story; but I shall do even better by you than that. I shall take you with me on my travels. You think I am just a honeybee, but really I am a fairy—a bee fairy. If I take you with me, you will have to be bee fairies also. Ah, now—look at yourselves! This is much better!" And, odd as it may seem, the children and Aunt Laura found themselves growing smaller and smaller, until, as honeybees, beautifully and delicately their little bodies were thrilled with a strange, new life.

Dickey cried excitedly, "Oh, look at me! How queer! Just hear me buzz!" But Fleet Wing silenced him. "No bee wastes strength like that. Bees are very business-like creatures. Now if you are ready to come with me, I shall explain things to you properly, and if you are willing to help me I shall be very glad, for, although I am a fairy, I have a great

deal of work to do. Are you all ready? Then come"

"Yes, yes, we are ready. Please let us help you."

Scarcely believing it possible, breathlessly, eagerly, the children and Aunt Laura gathered more closely about Fleet Wing; then impulsively the tiny wings of their new fairy bodies stretched themselves and they were gently lifted into the air. Off over the playhouse and the arbor, beyond the garden and the orchard, the tiny magical wings carried them. So easy, so graceful, so wonderful was the experience that it was with feeling of inexpressible delight that they followed the bee fairy, Fleet Wing, up, up, up, over the trees, the pastures, the farm houses, far, far below them in the delicately colored shades of a pictured earth.

As they flew they saw and sensed things which as human beings they had never known or even imagined. Such hues and exquisite colorings, such perfumes, such vast distances, such an indescribable freedom. Straight to the foot of the old pasture Fleet Wing led them, then down through the willows to the tiny brook, where on the lazy afternoons of summer Dickey and Robert had often waded and swam, sailed toy boats or skipped pebbles. Down they flew to the little inlet beyond the stepping stones, then on the sandy beach they stopped to drink.

"At home today," began Fleet Wing, "we are needing water very much, so fill your honey sacks as full as you can." Then she obligingly answered some of Robert's and Dickey's questions, for little boys, even though they are bee fairies, can ask quite as many questions as real little boys. "Yes," she told them, "our wings are extremely strong, though delicately constructed, with one large and one small wing on each side. When we are flying the large wing hooks to the small one with this tiny hook, but when we are at home and wish to go into the cells to feed our babies or to clean house our wings unhook and fold together neatly and nicely. You know it would be quite impossible for us to go into a cell if our wings were broad and stiff like the wings of a fly.

"Then too," she continued, "our wings must be very strong so we can carry our heavy loads of nectar, sometimes against a strong wind, and to fan this nectar into thick honey. We use our wings also in keeping our houses from getting too warm or too damp; but since you are going home with me, I shall tell you about that later on.

"Now, Robert, you have been asking me what all this water is for, so I shall tell you. Sometimes the honey we have laid away is too thick for

(Continued on page 87)

The old type beekeeping still exists: just there and don't care; box above and stone on top—honey is luck



Elmer A. Carpenter, who profited in this story

TEACHING old dogs new tricks is said to be an impossibility. However, it may be that somewhat depends on the dog. Then, again, perhaps the exceptions prove the rule. At any rate, changing beekeeping practice from a few box "skips," from which the honey was secured by "taking up" the bees, to producing a ton of comb honey in modern movable-frame hives sounds like a "new trick." Since the person who made such a change was sixty-two years old when he decided to discard the box-hive beekeeping—well, you can decide for yourself whether he should be considered young or old.

Bee inspection in New Jersey is not confined to bee disease eradication only, but is a combination of that and extension work in bee culture.

In the course of the work in Sussex County in 1920, Mr. Elmer A. Carpenter, Halsey, heard of the advantages in the use of the movable-frame hive. He had, up to this time, been keeping ten to fifteen "skips" (box-hives) of bees, and getting enough honey for family use.

After hearing movable-frame hives so highly recommended, Mr. Carpenter decided to try them. The change was made by hiving swarms in the new hives and killing the bees in the boxes. Mr. Carpenter has gradually increased his apiary until he now has forty-five colonies of Italian bees in



Transferred, modern style, what a difference! Soon as the beekeeper finds it out, like Carpenter did, what a difference in results, too.

From Pounds in Skeps to Tons in Hives

An Experience in Transferring

By E. G. Carr

ten-frame hives. Some of the hives are Jumbo depth.

Last year the crop was a ton of section honey, which was sold for 25 cents a section. Some unfinished sections are broken up and the honey strained into pint jars which sell for 35 cents, the customer furnishing the jar.

During the season Mr. Carpenter removes the comb honey supers and any unfinished sections are returned to the bees. But little effort is made to prevent swarming. Every other year the colonies are requeened, as Mr. Carpenter has learned from experience that colonies headed by old queens give less profit than those with young queens.

Most of the colonies are kept under a shed. Aside from this shed, which acts as a windbreak, no winter protection other than that given by a good, single-walled hive is given.

Exception could be taken to the shed arrangement, which makes manipulation exceedingly difficult, also to uncontrolled swarming. However, it must be admitted that Mr. Carpenter has come a long way in eight years at his time of life. From a few box-hives producing only enough honey for family use to a modern apiary producing a ton of comb honey in one season is no mean accomplishment.

Thousands of Colonies Go Into Washington Orchards

Demand for bees to be placed in orchards for pollination purposes will increase next spring, is the prediction of C. W. Higgins, of Wapato, newly elected president of the Washington State Beekeepers' Association.

Mr. Higgins is bee inspector for Yakima County, and at the request of Dr. R. L. Webster, State Bee Inspector, last spring inspected 1060 colonies and issued permits to yards he knew were clean to move 1968 hives. He had records of 3028 colonies used for pollination, not counting those moved prior to his receiving the orders to inspect.

In the Wanatchee district last spring 2000 colonies were used for pollenization, 650 of which came from Yakima and Benton counties. Neill.

Summer in the Southern Hemisphere

It is refreshing, while the snow is falling and the winds of winter blowing, to read of our Australian and New Zealand brother beekeepers harvesting crops of honey in November, December, and January. They have their turn at fair weather while we are shivering under the snows. "Turn about is fair play," it is said.

Can the Public Be Trusted?

By Robert B. McCain

What is the psychology of theft? The public is you and I—all of us. The Quaker said, "Thee and I are honest, but the other fellow will always bear watching. McCain shows this is entirely wrong psychology. From his experience, if you trust your neighbor he will meet the trust."

THE sign on our roadside honey stand reads, "Take the honey, leave the money," and we are often asked the question: "Do you lose very much by trusting everybody?"

It is a pleasure to be able to answer that question, after more than a year's experience, by saying that we have not lost anything by showing our confidence in the public, but we have actually gained by it. There have been many instances when we took more money out of the cash box than was coming to us for the honey that was taken.

An interesting sidelight from this little experiment of ours is the reaction of those who patronize our honey stand. We have yet to find anybody who would say that he considered it safe for us to conduct our honey stand in the way that we do, although these very persons prove to us every day that our confidence in the honesty of the general public is not misplaced.

One day a woman tourist rang our door-bell and handed in a dollar bill. She told the person who answered the bell that she thought it was not safe to leave money lying around on the stand like that. When told that we had never lost any money in that way, she said: "Well, the people around here must be more honest than they are where I live." This woman was probably a fair sample of the people "where she lived," and we found her perfectly reliable—and plain spoken.

A hobo, with his bed-roll on his back, passed our way, as many others had done, and still do. There is a camp of them not far away, and they patronize the stand just like other folks. This particular hobo looked longingly at the honey and was turning away when we asked him if there was anything we could do for him. "Well, mister," said the hobo, "that honey certainly looks good and I would like to have some of it, but, to tell you the truth, I ain't got no money." Turning back, he came near to the front gate and said: "I tell you what, mister, if you will let me have one of them little bottles of

honey to eat with my bread, when I get a job in the bean threshing I will come back and pay you for it."

Now, of course, we do not conduct a credit business, and least of all would we expect to open accounts with hoboes, but, rather than have the poor fellow eat dry bread for his supper, the small bottle was handed over with the statement that he looked like an honest man and that we expected him to return when he got the job.

This would be a real test. Could we trust a hobo? Well, we had said we would, anyway, but it was certainly a good place for our experiment to fall down. In a month's time the hobo returned, paid for the little bottle and bought a larger one.

A gang of Mexican laborers were employed on a ranch directly across the road from our honey stand. We had been told many times that these people could not be trusted under any circumstances. Consequently we were not a little disturbed one evening on going to the stand to close it for the night to find nearly all the honey gone. Relief came when we found the cash box well filled with silver and paper money. Not a cent was missing. It so happened that we had not seen the Mexicans go to the stand, but some of our neighbors saw them and reported it to us. When told that nothing was lost, they acted as if a mistake had been made; there certainly must be a catch in it somewhere!

We have also found that a few of those whom we have trusted without question have not shown the same confidence in us. These few want to be sure that we are telling the truth about the honey we sell, and they want to know whether or not the honey is clean. The doubters can usually be satisfied by making them the judges. There is usually no lack of confidence in their own opinions. So, with clear glass bottle and silver spoon, they are set the task of judging the quality of the alleged "pure honey." It looks good, it tastes good; it must, therefore, be good. They say so; and they know. That settles



This stand puts it up squarely to the customer to be honest

it; their confidence in our honesty is restored.

Someone reported us for not having the net weight marked on the bottle that he happened to take. There was a place on the label for the weight, but in this case it was not filled. The sealer of weights and measures, who traveled several hundred miles to see about this, said that the customer wanted to know how much he was getting for his money; he was afraid there was a catch in this confidence game, somewhere. Which is proof of the saying, "Thee and I are honest, but the other fellow will always bear watching."

No claim is made that the conduct of our little experimental honey stand proves anything, except that the part of the general public that happened to come our way showed themselves to be good customers and square shooters. As far as our own personal feelings are concerned, we are frank to confess that the experi-

ment was undertaken with a great deal of doubt and questioning.

In a certain sense, the experiment was forced upon us. Owing to a scant rainfall, we had a small crop of honey. This has come to be the rule for years past. And the shortness of the crop does not seem to make the wholesale price go up so that it can be noticed. Our honey was of excellent quality, though not very light in color. To sell in the case, at the market, would mean to sell at a loss; and the local grocery stores seemed more inclined to import honey than to offer any encouragement to local producers. So, in order to test the matter of selling direct to the consumer, we procured containers and proceeded to put up our honey for retail sale.

The roadside stand had been thought of and discussed many times, but the question always arose, "Who will look after the stand if we have one?" Then there was the other question, "Will it pay to have anyone give all his time to the stand, even if any member of the family can be spared for that purpose?" The conclusion of the whole matter was that if we had a roadside stand it would have to take care of itself, and if there were as many crooks abroad as we secretly feared there might be we would be out of luck. Well, for some reason, unknown to us, the crooks have not come our way—yet.

Leaving it to others to speculate on the soundness of our position from the point of view of good business practice, and to estimate the value of our experience as a contribution to social economics, we are content to say that we trusted the public, and the public, so far, has proven trustworthy. And, what is even more convincing, to an American mind at least, is that it has been a paying proposition.

The only credit we take to ourselves is that the honey we offer for sale is pure and clean, and that in taking the honey from extracting combs in which there is neither brood nor pollen we put into our cans and bottles an article of delicious food that retains its delicate flavor unimpaired. And we have the satisfaction of having people who live more than a hundred miles away return for more honey after they have tried a sample. Mail orders also come to us in this way.

On the basis of our experience, would we advise all beekeepers to do the same as we have done? With reference to the quality of the honey, yes. The quality of honey cannot be too good. Much of the honey offered for sale is inferior in flavor. Somewhere, somehow, it lost the delicate flavor it had when the bees finished ripening it and sealed the cells.

Honey that does not make the eater want more is not good honey.

With reference to selling direct to the consumer: That, by all means, if possible, should be done. It is the only method by which the producer can secure a fair price for his produce without robbing the consumer. But when it comes to offering advice in regard to a self-help roadside stand we have nothing whatever to say. The probability is that we have said too much already.

Dallas Lore Sharp

By Henry E. Christman



With the death of Dallas Lore Sharp on November 29, at his home on Mullein Hill, Hingham, Massachusetts, beekeepers and honeybees lost one of their best friends. Also the line of American literary naturalists that began with Thoreau, followed by Burroughs and Muir, and then Sharp, came to an end. There are still many able students of outdoor life with the gift of putting their observations into readable books, but they are of a different tradition.

Beekeepers will remember Professor Sharp for his "The Spirit of the Hive," a book, not on the technique of beekeeping, but talking intimately and quietly with beekeepers about the meaning of their craft and the satisfaction it yields; how they can know the poetry and beauty of life through their bees. "If I tell of my bees it is because I love them, stings and honey and honeycomb, and because through the open door of the beehive I find a more abundant entrance into the life of the fields than through any other door, and a larger right to that life," he would say.

Professor Sharp had an unequalled faith in bees. "... Bees are a good first step in an all-world brotherhood, and could well be included in our world peace plans. The symbol of that plan might be the hive, for its universality, its unbroken continuity

as a peaceful occupation, no less than its social significance—its practice and sacrifice for the common good." And again he wrote: "Instead of universal military training, I would advocate a hive of bees for everybody."

Just before the war broke out, Professor Sharp wrote an editorial for a paper he was serving, advocating that a hive of his bees be sent to the German Emperor and one also to the war lord of Austria. And he had extra hives for the British Prime Minister, the Tiger of France, William Randolph Hearst, and Theodore Roosevelt. He said: "If I could have interested these gentlemen and a few others in beekeeping, I could save the world from war." He has contributed several articles to the American Bee Journal.

Professor Sharp's death came after a long illness. He had been operated upon for tumor by Dr. Harvey Cushing in July and failed to regain his health. It was fitting that he should have died under his own roof, near most of his books, kindly observant books, filled with a mature philosophy, of which his wild life sanctuary was his own instrument in practical research. Four days after his death his ashes were strewn over his big pines on Mullein Hill, according to his own wishes. It was under the shade of a grove of pines in Maine that he was married, rather than under a church roof.

Professor Sharp had two books in manuscript form when he died.

Who Says There's No Kick in "White Mule"?

Forty hives of bees belonging to W. Matt Nelson, near Danbury, North Carolina, died recently due to poison, which after being analyzed proved to be a concoction of mash, sugar, lye and yeast.

Mr. Nelson discovered the plight of the bees when several fell from the hive daily, in dazed condition, later swelling up and dying. He called upon state men at Raleigh to determine the malady and they took several of the dead bees and sent them to Washington for analysis of the poison. It was discovered then that the bees had been eating the deadly concoction.

The facts discovered have led to the belief that the bees had been patronizing some distillery where modern monkey rum was being manufactured from lye, yeast, sugar and other ingredients. It was the lye in the mash that proved fatal, it is believed.

Up until the loss of the forty hives, Mr. Nelson had one of the best apiaries in this county.

Bray.



Glimpses of the Gulf Coast Region where the long season and mild climate favor the breeding of bees.

Prof. J. M. Robinson and W. A. Ruffin in Alabama College Apiary

Producing Package Bees in the South

By Frank C. Pellett

IN these days, when ten thousand packages of live bees enter Canada by way of Winnipeg alone, it is hard to realize how new the business of shipping combless packages really is. One is surprised at the absence of advertising of combless packages from the pages of the bee magazines of only fifteen years ago. Even the sale of queens was but a small fraction of its present volume.

The development of this business has been so recent that those who were pioneers in the field are still actively engaged in it. Because of the long season, the mild climate and the variety of nectar sources, the states bordering on the Gulf Coast are especially favorable for the breeding of bees, and it is in these states, from Georgia to Texas, that we find the larger number of breeders.

Because of the long season and the light honeyflows, the bees con-

tinue breeding to such an extent as to consume much of the honey, and thus offer rather poor returns from commercial honey production. As we go northward the season is shorter and Nature concentrates her efforts into a more intensive season, with the result that much larger average crops of honey are secured as surplus. The conditions that favor honey production in the North provide a good market for live bees. We are accordingly developing into a highly specialized industry, with the beekeeper in the mild climate of the South rearing the bees for his friend in the North.

A prominent bee man of Manitoba said to me on one occasion that they don't worry much about wintering up there. If the bees die, they can fill the empty hives with package bees and, with combs drawn, feel sure of getting an average of a hundred or more pounds of surplus honey. One extensive honey producer of North Dakota killed several hundred colonies at the close of the past season. He felt that it would be cheaper to buy package bees next spring than to go to all the trouble of preparing them for the long Dakota winter. Eliminating the losses which are sure to occur and saving the honey which the bees would consume, he estimates, will fill the hives with package bees again next spring.

More and more does the northern beekeeper depend upon the South to supply him with bees, and more and more does the southern beekeeper depend upon the sale of bees instead of the sale of honey. The trend both north and south is toward more extensive operations. There are many live bee shippers who own from a

thousand colonies upward, and the northern honey producer who owns a thousand colonies of bees is by no means rare.

When I visited this region in the early spring of 1917, the shipment of live bees was in the experimental stage. Several had engaged in it for a year or two previously with varied success. Losses had been heavy and returns disappointing in many cases. The express companies did not know how to handle the bees in transit, and the shippers had much to learn about packages and feed.

At first, dealers received small orders. Even the most experienced beekeeper hesitated to buy more than half a dozen packages at one time for fear of failure. This required a large amount of correspondence for the volume of business transacted. At the time of that first visit, the dealers reported that confidence was increasing and that larger orders were coming in and



Professor F. E. Guyton, who teaches bee culture at the College of Agriculture



W. A. Ruffin, Extension Apiculturist, Alabama Polytechnic Institute

most of them were getting so many orders that they found it hard to keep pace with them. Since then the development has been continuous. Those who were in the business have greatly increased their facilities and many others have come into the field, until it is now possible to



Jasper Knight, above, of Hayneville, Alabama, ranks high as a beekeeper, and he loves sheep. His place boasts some real members of the wool family, too.

J. M. Cutts and his two sons at Montgomery, Alabama (lower picture). The boys follow in the father's business, according to present indications.

place an order with a single shipper for several hundred packages of live bees and have it filled promptly, without interfering with his shipments to other customers.

The package business requires considerable working capital and good management. The season is short and the buyers want prompt service. It requires a large number of bees to handle the orders properly. Most of the shippers operate from one to two thousand colonies. They begin shipping early in April and continue until June. It is usually the early shipments which give most satisfactory crops, since the bees must raise one or more cycles of brood to be ready for the harvest.

There is one serious handicap which the shipper, no matter how extensive his outfit, or how efficient his methods, is unable to overcome, and that is the weather. In the humid climate of the Gulf Coast region there is an annual rainfall of about fifty inches. It often happens that at just the time when demand for shipment is heaviest, there will be a series of rainy days that interfere seriously with operations. It is hard to handle bees successfully in the rain. Not only is it difficult to get about, but the bees are cross, and opening the hives is not only unpleasant for the beekeeper, but bad for the bees.

Most shippers like to fill packages in the middle of the day, when the old bees are in the field. They know that young bees will prove far more profitable for the buyer than old bees, and good results bring repeat orders. In rainy weather the diffi-

culties are such as to discourage anybody. The purchaser should bear in mind such problems and give the shipper as much leeway as possible in the time of sending out the bees. Early orders greatly assist, since equipment can be prepared in advance and estimates made of help and other necessary items.

Visiting in Georgia and Alabama

My last visit to the Southeast was ill-timed. It was in late February and early March, just the time of year when the beekeeper has the least to do with his bees. At that season one could learn but little of the methods of operation by seeing the men at work. A far more serious difficulty, however, presented itself—the worst weather conditions in years. About twelve inches of rain fell in a few days' time and the dirt roads soon became impassable. Even the improved highways were in some cases closed to traffic because of



State Inspector Atchison, Alabama

floods and north- or south-bound tourists were held up for days, unable to proceed on their journeys.

Under such conditions I often had to give up seeing the bee men after driving within a few miles of their homes. Only those could be visited who lived on the hard roads, and because of washouts even these could not always be reached. It is a bit disconcerting to drive over strange roads with water to the running-boards and the fan at times splashing in the water. We detoured through orchards and drove many miles across country to reach a place but a short distance away. We crossed washouts on planks laid down for the wheels of the car and bridges where the water reached to the crossarms of the telephone poles and approaches were crumbling.

At one point the mud was so deep that no car could pass through on its own power. Our car was pulled through a long stretch by a caterpillar tractor. The car dragged over the mud like a boat, with the axles smoothing the surface between the wheel tracks like a plank used to smooth down newly laid cement.

A fine system of hard roads is under construction and it will soon be possible to reach the principal centers in almost any kind of weather. Many of the beekeepers, however, live off the main highways and will be isolated in such times.

After all my long journey, I met only a few of the queen and package shippers of the Southeast, and, in most cases, it seemed unwise to undertake visits to the apiaries of those I did see. However, the trip was not without compensations, for I did learn much about general conditions in that region and enjoyed the re-



At left, Merrill's mating yard, Citronelle, Alabama. Lower, apiary of W. E. Harrell, Hayneville, Alabama, under tall pine trees.



lease from the cold and stormy weather of late winter at home.

In the vicinity of Montgomery, Alabama, there are several extensive dealers in bees and queens. M. C. Berry, who was a pioneer shipper, has about two thousand colonies, some of which are run for honey in Wisconsin and Manitoba. It happened that M. J. Deyell, of Ohio, arrived at Montgomery at the same time that I did, and together we enjoyed the hospitality of Mr. and Mrs. Jasper Knight, who entertained a little group of bee folks at their delightful home in Hayneville. It was on the eighteenth of February, but the day was balmy and it was a delight to be in the open air. It was especially pleasing to find such weather after the severe cold and ice that we had so recently left behind at our northern home. With me were Mrs. Pellett and our son Melvin, who were for the first time making a visit to the southland.

Since the muddy roads made it difficult to reach the Knight apiaries, no attempt was made to do so. Instead we looked over the pecan grove and his fine sheep. Bees are Knight's main business, but he has a very nice grove of well selected varieties of pecans, which brings him a substantial addition to his income. The sheep are a new venture, but since they are especially good ones they promise to be equally profitable.

I wish that it were possible to do justice to the dinner which Mrs. Knight served. It was equal to any banquet, and the group of congenial friends meeting around the table in that hospitable southern home made it a day long to be remembered. Wherever we went we found this same kindly hospitality.

W. E. Harrell, of the Hayneville Apiaries, is a neighbor of Mr. Knight and has one apiary near town. Since that was but a short distance off the graveled highway, we all went there.

Situated on a sandy knoll under tall pine trees, it is a well-drained site with sufficient shade to make work pleasant at any season of the year. Harrell had twelve hundred colonies of bees, and was just then busy cutting out supplies to provide shipping cages for the coming season.

J. M. Cutts, who, with his two sons, is extensively engaged in the package bee business, and W. A. Ruffin, the genial extension lecturer from the Alabama Polytechnic Institute, were members of the party.

With rain and more rain, we drove south to Florida, stopping to gossip a bit with a few of the beekeepers as we passed. Returning northward, we found our roads cut off by floods and washouts and continued the same kind of peek-a-boo game that we had found in Alabama. There was one fine day spent with J. J. Wilder on a most interesting visit to the Okefenokee Swamp. Wilder has bees scattered over a wide area, and bears every year destroy from one hundred and fifty to two hundred colonies.

We called on the York Bee Company at Jessup and had a delightful visit with Morley Pettit and his sister at Valdosta, who produce honey in Ontario and bees in Georgia. Reaching the limits of my space, I find no room for an account of these visits nor of those with Reamy and Hunter at Quitman, J. W. Sherman at Valdosta, or J. G.

Puett & Sons at Moultrie, or others along the way. I came away, however, impressed with the fact that the queen and package business of the Southeast is highly specialized in the hands of competent men who are equipped to handle a large volume of orders promptly and efficiently.

Everything indicates that the specialization will continue and that more of the large producers of the North will come to depend upon the southern shippers for bees to harvest their crops.

I am looking forward to an opportunity to go back again when the weather and roads are good and when it will be possible to visit the rest of the fellows. There is so much of interest and so many good bee men in that region that one short trip gives but a poor idea of it.

Honey from Corn

In times past there has been much discussion of the fact that bees work freely on Indian corn, or maize. Corn is grown in such large acreage in the Mississippi Valley that enormous crops of honey could be harvested, if it were a honey plant.

The fact has often been stated that corn is a grass and that the grasses are nectarless plants which are wind pollinated. In spite of this fact many beekeepers have observed their bees at work in the corn fields,

and some have insisted that they were storing honey.

When there are so many conflicting opinions a subject is worthy of some investigation to determine the facts and, if possible, reconcile the apparent conflict.

Corn is a very abundant source of pollen and at times the bees store quantities of it. It is probably true that many reports of honey from this source have been made, without investigation to learn what the bees were getting. When large numbers of bees are at work it is natural to assume that they are in search of honey.

However, we cannot question the fact that bees do at times store something besides pollen from corn. Investigation indicates that this comes from several sources. Probably in most cases it is honeydew, secured from plant lice, which are very common on the upper portion of the stalk. At other times small leaf hoppers may be present in sufficient numbers to provide a sweet excretion in such quantity as to be gathered by the bees.

While the corn plant is nectarless, it does at times exude a sweet very similar to nectar, and it is this exudation which probably gives rise to the insistent belief in honey from corn. On page 599 of *Gleanings in Bee Culture* for 1882, H. M. Morris, of Rantoul, Illinois, reported that his bees were working heavily on the corn plant, getting honey at the joint

at the base of every leaf. He stated that this flow lasted for about two weeks and that he secured several hundred pounds of the honey. The editor commented that the sample sent to him would rank with the best in color and flavor. There are so many similar reports from different places that the fact that bees store honey from corn can hardly be questioned.

Perhaps this product is hardly to be called honey. Certainly it differs in quality from insect honeydew. If we cannot class it as honey, neither can we class it as ordinary honeydew, and in that case we must recognize a third classification. Perhaps plant honeydew as distinct from insect honeydew would be a proper determination. It would seem, however, from the editor's opinion of its quality that it might safely be passed as honey.

Frank C. Pellett.

Progressive Beekeeping

By Edwin A. Lewis

As far as I can remember, I think this is the best one ever pulled on me. I was running a little photographic shop over the drug store in a Kansas town, and, being interested in bees, had put two swarms out on the roof of the lower story, which I called my back yard. At the close of the season I was much disappointed to find that after the best of care I could give my bees I had

only a very few sections of honey. I scratched my head and studied the matter. Finally I decided that it was not worth while to try to sell so few sections, but would show my good spirit by giving it to friends. No sooner decided upon than it was done.

The next morning I met my friends with the liveliest anticipations of receiving their thanks and expressions of enjoyment of the treat I had served. Sure enough, the thanks came forth readily and were most warmly expressed. Hot biscuits and honey! M-m-m-m! And the wife hadn't made biscuits for ever so long. It was delicious, though the honey seemed to have a flavor which was new to my friend. I passed on waited to know what the next one would say. Just as hearty. Hadn't had any honey for a long time and the whole family enjoyed it. Odd tasting honey, though. Never had had any with just that peculiar flavor. I said to myself, "What is the matter with these birds? They must have gotten out on the wrong side of the bed this morning."

The druggist was a good friend of mine, so I had given him one or two sections. "Oh, boy, that was fine honey! That was the best honey I ever ate in all my life." He was elaborate in his praise. He rubbed his stomach and licked his lips and rolled his eyes heavenward. "You could taste the coca-cola and the marshmallow and the chocolate. Oh, boy, but that was good!"

And then light broke through. Every time the druggist had emptied a syrup container or a coca-cola barrel for the fountain he had set it out at his back door and my bees had promptly gone over the edge of the roof and cleaned it out. Sure it was good honey, but it was a long time before I could see the joke—from the viewpoint, you know, of a progressive and up-to-date beekeeper.

Missouri.



Upper picture, J. G. Puett and son, Moultrie, Georgia. Lower picture, queen-rearing apiary of S. E. Merrill, Citronelle, Alabama.



Experiments on Keeping Bees in Sun-Lit Hives

By A. N. Briuchanenko

IN September, 1927, I happened to see the bees of A. I. Igoshin in a glass hive. It stood in a living-room, with the entrance through the window frame. The outside temperature was low, so that all colonies that were outdoors were not flying and had prepared themselves for winter.

This increased my surprise, on examining the bees in the bright hives, to find them so gentle at such a time and to find the queen laying on the exposed side of the first comb from the window in the beams of the setting sun that lighted it through the glass side of the hive.

Brood was being reared in the light or in the direct rays of the sun.

One very important fact was noticed. Although the brood nest in this hive, confined as it was, must have crowded the queen during the whole summer, she nevertheless would not leave to go up into the dark super which was above. The glass panels of the bright hive were never covered by shutters nor were they varnished by propolis. The bees deposited honey in the dark portions of the hive. The lighted combs had good areas of brood.

Noting the absence of anger in these northern bees during the examination of their hive without any smoke, I had to suppose that these bees ceased to be ill-tempered if they worked and emerged in a lighted hive.

Owing to the gentleness of bees in these hives and to the ease of examination through the glass panels without opening the hive, it is possible to expect a practical advantage from hives of this type in commercial apiaries, especially in economy of time and management.

The bright hive of A. I. Igoshin is different from the observatory hives usually used for investigational and educational work. These observatory hives have glass panels usually covered with wooden covers, except during periods of observation, and it has always been supposed that the penetration of the light into the hive was a nuisance to the bees. These observation hives generally contain one frame, seldom more. If they are made according to the type devised by Professor Frish, they contained more than one frame. The frames are arranged in a vertical plane.

The bright hives of Igoshin have their glass panels open always, so that the brood nest can employ the sun's energy and increase the profit from the colony. They must be distinguished from the common observatory hive.

Professor Briuchanenko and Mr. Igoshin bring up an interesting possibility. The experiments tend to show that bees in hives exposed to sunlight, through glass panels, are distinctly benefited thereby. Does it point to practical application? We commend a thorough reading.

I published the results of Igoshin's experiments in the journal "Vestnik of Russian and Foreign Beekeeping" for 1928, in numbers two and three. Previously I had made inquiries as to whether other investigations had been published in the bee literature of the world concerning the positive influence of sunlight on the brood nest. I found nothing.

There was only one piece of work, that of Clifford Muth, who investigated the effect of ultra-violet rays on workers and on eggs laid by the queen. Dr. Bertholf reported, in August, 1928, in the apiculture section of the International Congress of Entomology, on his work on the reaction of workers to lights of different wave lengths. This report had purely a scientific character and not a practical one.

So I persistently recommended to Mr. Igoshin that in the spring of 1928 he begin systematic investigation in order to make it possible to apply the sunlight in beekeeping practice. In the summer of 1928 he succeeded.

Many Russian beekeepers last summer began to keep bees in bright hives and to observe the results. N. I. Shahovskoi and his neighbor, near Leningrad, made many valuable observations which gave positive results. His article is being published in the journal "Bee and Apiary." In the mountainous Shoria, in Altai, two brother beekeepers, P. and V. Shardakov, and their neighbor, L. F. Vorobiev, also made many observations which showed an intensive building up of colonies in bright hives. They also found that excessive heat in such hives is dangerous. A very intensive ventilation was found to be necessary in summer for the bees in bright hives.

Prof. A. U. Lapin tells us that observations of a beekeeper, F. E. Suslov, of Tashkent, show that bees live very well in bright hives. The weakest colonies overtook the strongest and the most cross colonies became gentle.

The same summer some Moravian beekeepers, having read the paper of Igoshin in "Vestnik," began to study

the question and repeated the work.

Engineer Savvin, the manager of the experimental station in Shidlovizi, Cheko-Slovakia, informed me last summer that he had begun to study the influence of light on the brood nest. At first he put away the wooden shutters of the observatory hive, Frish type, and in the fall built a commercial hive with glass panels so that the space between the combs could be lighted. He also made his observations during winter.

He reports wonderful results which, furnishing his words, "lead at all events to many perturbations in theory as well as in practice." This same station proposes to build, the coming season, a special bright-hive house-apiary with a row of glass hives; some of the hives will be outdoors. The observations concerning the wintering of bees in bright hives will be published towards spring.

* * *

(The article by Igoshin on the influence of sunlight follows.—Editor.)

Death of 90-Year-Old Beekeeper

Mr. Phillip Pellerin sends us from St. Clair, Michigan, a clipping from a Marine City paper mentioning the death of a pioneer who was also a beekeeper. He was Charles F. Farman, born in 1840. He served in the Civil War, was imprisoned in Libby Prison, from which he escaped. He had fought in numerous engagements.

Wasatch Range Country

Emery County, Utah, is profiting considerably by bee culture, which is carried on along the slope of the Wasatch Range. Thousands of colonies of bees are shipped into the county from California every year so that they may gather the nectar from the alfalfa blossoms which abound in this territory. Nectar is also taken by the bees from the numerous fruit blossoms which flood this territory, the growing of pears, peaches, apples, etc., being a basic industry.

The honey produced in Emery County is regarded as the finest produced anywhere by many apiarists. Emery County was named for Governor George B. Emery and was created February 12, 1880, when he approved the act of the Legislature. It has an area of 4453 square miles and a population estimated at 8,000, many of whom are bee men. Fine highways now reach all parts of the county and lead to apiaries along the valleys. G. P.

The Influence of Sunlight on the Bee Colony

Practical Results of Keeping Bees in Sun-Lit Hives

By A. I. Igoshin, Moscow

IN 1927, the discovery of extraordinarily vigorous development in a nucleus exposed to direct sunlight, and the appearance of what seemed to be new traits of character and new conditions in the physical nature of bees, acted as an influence to further work in the positive effect of sunlight on bees. I communicated this fact in the February and March number of "Vestnik of Russian and Foreign Beekeeping" for 1928.

In 1928 a more careful experiment was made on a large scale in my apiary and in apiaries of some of my friends in order to ascertain practically the influence of sunlight.

From my notebook I take the most essential points:

Toward the spring of 1928 I made twenty-four eleven-frame Dadant-Blatt hives of 44 mm. lumber, constructing them so that the sun could light the space between the combs. The fronts and backs of twelve of the hives had double glass panels. All of the supers used but one were dark.

The colonies were equalized in pairs—that is, each colony in a bright hive had its equal in a dark hive. Groups of these pairs were put in different places—in the sunshine, in a house-apiary, in an orchard, in a room. The entrances were toward the east, so that the brood nests were lighted from east and west by the sun.

The colonies were matched as carefully as possible. Some colonies were weighed in order to find the weight of the bees; in others the weight of the bees was determined approximately by sight, taking into consideration the number of combs occupied. The weight of the honey was determined in the same manner. All other conditions were equal. The queens were equal in age and in quality. Only 20 per cent of the queens had not been tested before. All of the bees were local blacks.

Ten of these bright hives were in my apiary in Dankov (upper part of the River Don), where I made regular observations, and two were in my apiary in Moscow, under the supervision of N. S. Fedin and S. S. Sheliakow.

In the region of Dankov the honey-flow is from willow and orchards, and then there is next to nothing till the main flow, because white clover generally gives no nectar. So the stores decrease till the blooming of buckwheat. The fall flow is extremely light. In Moscow there is no buckwheat and not many cultivated fields. The crop is mostly from basswood.

The experiments were conducted in a season that was unsuccessful in its honeyflow. Nevertheless, the crop was as follows:

BRIGHT HIVES

Number of colonies	Per cent of colonies	Crop of honey
6	50	208 kg
4	33 1/3	57 kg
1	8 1/3	24 kg
1	8 1/3	7.4 kg
Total 12		296.4 kg

DARK HIVES

Number of colonies	Per cent of colonies	Crop of honey
6	50	96 kg
4	33 1/3	48 kg
1	8 1/3	8 kg
1	8 1/3	14 kg
Total 12		166 kg

The Rapidity with Which Colonies Build Up to the Main Flow

During one and one-half to two months of spring, the dark colonies increased three to three and one-half times; the best bright ones, seven to eight times.

Physical Qualities of Bees Get Better in Light

Tests were made of endurance in relation to (1) cold, (2) hunger, (3) activity.

(1) In October bright colonies gathered nectar at 7° C., whereas no dark colonies worked at all.

(2) Twenty bees were taken from the dark colonies and twenty from the bright ones. They were put into a swarm catcher, where they remained without food for three days. These bees were taken without smoke from the upper part of combs. In three days the bees of the bright colonies could still take wing. On the second day the bees of the dark colonies were only crawling and dying.

(3) Observation showed that the working day of bees from the bright hives were about one to two hours longer than for bees from the dark hives.

The Progress of Brood Development in the Sunshine Is More Energetic

One sealed comb of brood was taken, all the eggs in which had been laid in a single day. I took it from the center of the brood nest and put

it next to the glass. This particular hive was not in the experiment, but its sides had double glass panels. One-half of this comb was covered by a board with dark material over it. I observed that the bees emerged earlier by more than twenty-four hours in the light and sunshine. The rate of emerging was also different. While five to six bees per minute emerged in the light, only three bees emerged in the shadow.

I had no time to organize an experiment to determine the length of the development period from the laying of the egg on.

Bright Colonies Accumulate Radiant Energy in Cold Weather and Use It

Observations on this were taken about ten times in late fall at a temperature of from 2-5° C. below zero. All colonies roar and get warm. As the sun rises to light the brood nest through the spaces between the combs, the bees in the bright hives cease their movements till they get quite silent, while the dark colonies continue their disturbance the whole day.

The Influence of the Sun on Bacteria

Mould and fungus which appeared in cold weather in the dark hives were never seen in the bright hives, not even in one into which water had somehow found a way and a pool remained on the floor for a long time.

Light and Enemies of Bees

The beemoth was very rampant this year because some combs had been left in the attic as a source of moth. Waxworms were bad in some of the dark hives, especially in the side combs. However, there were no waxworms in the bright hives.

Honey Ripening Proceeds More Rapidly

The air in a bright hive seems to be more dry, and honey is ripened more rapidly without requiring energy on the part of the bees for evaporating the water. Unsealed, extracted honey from the combs of bright hives did not get sour. Much of the unsealed honey from dark hives did.

It is easy to note the increased vigor, energy and quicker movement of the bees from bright hives, but it is difficult to state it exactly. One must have time to devise methods for investigating these things.

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California State Beekeepers Meet



California beekeepers turn out in force at San Diego

The fortieth annual convention of the California State Beekeepers' Association was held at San Diego, December 11 to 13, inclusive. There was a large and enthusiastic attendance on all the sessions of the convention, and many excellent papers and addresses were presented.

The convention went on record in opposition to the corn sugar law now pending in Congress, and also took action looking toward a uniform valuation of colonies of bees for the purpose of tax assessment. The figure agreed upon was three dollars per colony.

One of the most interesting and instructive addresses delivered at this convention was that delivered by Mr.

Carroll D. Scott, a teacher in the San Diego High Schools. The subject was, "Bee Study in School." The speaker showed a thorough first-hand knowledge of the life history and behavior of the honeybee and her place in the scheme of Nature, and he also showed an unusual ability to present the subject in an entertaining manner. In this day, when much of the charm of bee lore is lost in the struggle of commercial honey production, it is refreshing to have the art and poetry of the beekeeping industry brought to our attention. At the same time there is no more effective way in which honey can be advertised than by showing to the public the wonders of the hive.

The matter of the diastase content of honey was very ably presented by Mr. George H. Vansell, of Davis Farm School. The experiments of Vansell and Freeborn reveal a wide range of diastase content in different samples of honey. Some samples contained practically none at all, while others, notably, black locust honey, showed a high percentage of diastase present. Diastase is found in abundance in the saliva of the human mouth, and is effective in converting starch into sugar in the digestive tract. The source of diastase in honey is believed to be the pollen grains which the honey contains. The honey that tested the

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The Influence of Sunlight on the Bee Colony

(Continued from page 83)

Light Turns "Wild" Bees into Domestic Ones

Is it possible to say that bees are quite domestic if their behavior does not differ from the so-called "wild" bees of the woods? A wild animal is tamed only when, from its birth and during the period of its growth, it is with man, gets accustomed to him, ceases to fear him, and begins to have confidence in him.

Bees in dark hives, in hollow trees and other similar habitations, are deprived of man's presence from the moment they emerge until the moment they begin to fly.

According to my observations, in all cases, the bees in all the bright colonies became more quiet and ceased to attack men and animals, even during the first season of experiment. This change in the temper of the bees is very striking. It differs in degree. For instance, some bees seemed to have quite lost their anger and nervousness. Others stung only at attempts to cause them damage, as during the removal of honey or when pinched.

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Group in Attendance at Alabama Meeting



The above group of beekeepers were part of those in attendance at the convention of the Alabama Beekeepers' Association at Montgomery, November 7 and 8. Front row, left to right: L. C. Short; L. T. Floyd, Provincial Apiarist, Manitoba; J. M. Cutts; Mrs. Paul Cutts; Mrs. P. M. Williams; T. R. Thagard; J. Allen. Center row, left to right: Zed Gafford, Bolling Bee Company; F. E. Guyton; S. E. Merrill; Thomas

Atchinson, Inspector; Marvin Talley; W. A. Ruffin; W. E. Harrell; Jasper Knight.

Top row, left to right: H. E. Mancill; Dr. W. Whitcomb, Southern States Field Station, Baton Rouge; P. M. Williams; Mr. Raney; Mr. Cumber (with A. C. Berry); and Mr. Hoit.

The readers will recognize many of the prominent southern breeders and shippers in this group.

California State Beekeepers Meet

(Continued from page 84)

largest percentage of diastase contained the largest number of pollen grains. While it was shown that diastase could be destroyed by overheating, it was also proven by experiment that honey could be heated to 150 degrees F. without injury.

The 1930 convention is to be held in Bakersfield, in November.

R. B. McCain.

Further Notes on the California Convention

The fortieth annual convention in San Diego, December 11-13, was a huge success. An estimate of 250 average attendance may be too conservative. The program was full, well arranged, and carried out in an expeditious manner. The officers, members, and friends of the old California association certainly have built up an enviable record in the matter of worthwhile gatherings. The most a reporter can hope to do with any such worthy meeting is to very briefly outline the high lights for the benefit of the unfortunates unable to attend.

In the first place, San Diego did herself proud in acts of hospitality, including boat rides, music, banquet entertainment, and the like. The singing at the convention, by the beekeepers, was such as is seldom heard in any group. The writer heard the singing of the opening session from a short distance, before the meeting place was known to him, and began looking for another group because this singing was far too good. The convention was full of just such surprises.

The honey exhibit was fine. Special mention should be made of the honey foods department display of cakes, cookies, candies, preserves, breads, and other delicacies. In connection with the exhibits and other advertising, a honey prize essay contest brought some hundreds of school children into competition.

A cooperative offer of pooling and selling service was extended to California beekeepers by the Almond Growers' Association. Consumption of such a scheme would no doubt bring rich reward to both honey producer and this successful nut association, whose volume of business at present is somewhat too seasonal. The paper on diastase seemed of special interest. The possibility of the Western Plant Quarantine Board functioning in uniform bee and honey regulations was seriously considered. Progress reports on cost of production were very much worth while. A semi-serious "cartooned" presentation of "The Business End

of Bees" contained many truthful words spoken in jest. Honey certification seemed to worry the visitors from other western states, and apparently a better understanding of equitable quarantines in general is rapidly approaching.

A threatened gesture concerning enforcement of the California Apiary Inspection Act failed to materialize. Good sense was displayed generally in the whole matter. Let's not display our difficulties for the amusement of the public. The inspectors' dinner, although closed, is reported as being full of golden rule spirit toward the other fellow.

Jake Haymaker.

The Influence of Sunlight on the Bee Colony

(Continued from page 84)

I felt the utmost joy when I became convinced of the fact that bees in bright hives were really getting quite domestic and capable of being educated as other domestic animals. It is known that animals develop their abilities because of their joint labor with man.

I threw a handful of bees of "dark education" into glass bottles and also into an open glass. They struggled without avail against the bottom, the nature of the glass being evidently

unknown to them. When the experiment is repeated, they begin very slowly to study the glass.

When I threw into these same vessels some bees from bright hives, they at once flew out through the opening, even though turned back from the light, although they had never had experience with bottles and glasses and had only become used to the nature of flat glass in bright hives.

When I made an aperture in the inner glass panel of the bright hive, the bees at first got through it and then struggled against the outside panel. At last, having learned this trap, they ceased to crawl into the space between the two panels.

It is a great pleasure to work with bees that are gentle. The historical struggle which man has made against the bee would seem to come to an end. Both man and the bee lost much in this struggle. I want to believe that soon the systematical quieting of bees by smoke, the weapon they dread, will be held an atrocity. According to my observations, bees often stop activities, such as wax building, for forty-eight hours after having been quieted by smoke, even though there were no vacant cells for the depositing of nectar.

In these bright hives, I might add also that I have never seen robbing, nor could I start it artificially.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

CELLAR CONDITIONS

I started beekeeping this summer. Have my bees in a separate cellar, 6½ feet deep, under our house. We have had very cold weather the last two months, as low as 30° below zero.

I was in the cellar the other evening and the temperature showed about 44° above. I have eight hives, and found one of them full of dead, molded bees on the bottom board and the rest of them also have some dead bees laying at the entrance and on the floor. Would you please give me advice if I can do anything for the bees?

MINNESOTA.

Answer—The best advice I can give you is to leave your bees alone until the weather is warm enough to take them out. The more you will disturb them, the worse off they will be. The cellar is at the proper degree of temperature; if you can keep it at that, the bees will be quiet.

The only possibility for trouble would be if the bees could not get any air; then it would perhaps be necessary to pull out the bees that are dead at the entrance of the hives. But it does not take much space to give them enough to breathe. If they have enough to eat, they will be all right.

MICE IN HIVES

Is there any way to poison or destroy mice in beehives that are packed for the winter. They are packed with planer shav-

ings and tar paper. I was busy at the time the entrances should have been contracted for winter, so some probably have mice in them.

MICHIGAN.

Answer—We have had mice get into hives when the entrance was too large, but we have never found them alive in hives, though we have often seen where they had been killed by the bees and sometimes embalmed in propolis.

But if you think there are some mice in your hives, it will be a good plan to poison them with some of the poison they sell for mice. It is not likely that the poison will endanger anything else. Place it inside the entrance. If you should have a warm day, it might pay to examine the inside of the packing. In any case, I would recommend that you reduce the entrances so as to exclude any additional mice that may lurk around.

FOOD CHAMBER IN SPRING

I have just one question that I would like to have you explain to me, if possible. My bees are down cellar in two standard hive bodies. After I have taken the bees out next spring, I have in my mind to give each colony a full box of honey for brood rearing on top of the two hive bodies, with a queen excluder between, and would like to know whether the bees will clean out the honey. Most of my honey boxes contain

cross combs and I'd like to melt up those combs later. Please advise.

WISCONSIN.

Answer—If you give your bees the honey in question when they are short of food in spring, they will surely take it. But if they have some honey left in their hive bodies, they may not use it as fast as you would like. I suggest that you uncapped the combs of that honey, as bees are much more likely to use honey which is not capped than capped honey.

If your bees do not fill both stories in spring, it might be advisable to remove one story until they have filled the main one with brood. When bees have so much room they cannot keep the brood warm, as fully as they should. Examine them before giving them that surplus honey and decide for yourself what is best to do.

HONEY GRAULATED IN COMBS

I have about twenty ten-frame hives full of honey from last fall's gathering. On account of incompetent help and other business, it was not extracted. My extracting room is well protected, except from cold and zero weather, and the honey must have been, by this time, crystallized in the frame. What could be done? I have to use the frames in spring gathering. Any information will be appreciated.

NEW YORK.

Answer—In spite of the cold, the honey may not be as granulated as you think. I would recommend that you put it in a very warm room for several days, then examine it.

If it is granulated, I know of no other way to do than to melt it up. We have never had that trouble, although we have had comb honey in very cold storage several times. But much depends upon the kind of honey and its quality.

TRANSFERRING

I would like to have your advice on transferring. I have several eight-frame colonies and would like to put them in ten-frame hives, also queen them at the same time. I am planning on just lifting the eight frames out and putting them into the ten-frame hive on the same foundation, also catching the old queen, and in about two days introduce the new queen. Please give me your advice on this plan and also when would be the best time in this section.

ILLINOIS.

Answer—The best time to transfer bees is during fruit bloom, but to change them from an eight-frame hive to a ten-frame it may be done at any time when bees can fly. To change the queen, if you buy a new queen, do not kill the old one till the new one is at hand, and put her in just as soon as the old one is killed. Keep her caged forty-eight hours before releasing her. Then they will hardly realize that their queen has been changed.

DEATH OF BEES IN WINTER FLIGHT

1. We had a heavy snowfall, followed by bright, warm weather that brought out the bees. The result was that in front and around the hives hundreds of bees perished in the snow. I have the hive entrances reduced to about one and a half inch. How can I prevent the bees coming out in bright weather and light as in this case? Here in this part of Virginia things like that will happen several times each winter, weakening the hives considerably.

2. I have a number of unfinished sections. Is it a good plan to put them on the hives as soon as brood rearing starts in spring, say the end of February?

VIRGINIA.

Answer—1. We have some trouble of that kind nearly every winter. But we have always noticed that the colonies that lose the most bees on the snow are generally the strongest in spring, probably because they are in good spirits when they take a flight and only a small part of them die on the snow. Try and spread straw or forest leaves

in front of your hives after the snow, so that they may alight on it instead of alighting on the cold snow. It has always proved a help to our bees.

2. Unfinished sections to be emptied by the bees in spring will be all right if you don't put them on too early, as the bees might soil them. In this locality the end of February would be too early, as the winter is not yet over then.

MOVING BY RAIL

Would you be kind enough to give me some information on the moving of bees by rail? I am about to make a trade with a party from Sioux City, Iowa; he has two hundred colonies. I would want to move them to Dubuque, Iowa, in March or April.

What kind of car is best, box or flat car? Would I have to put screens on each hive, or would it be enough to just place a screen in the entrance?

CALIFORNIA.

Answer—We have never had any trouble in shipping bees in car lots in a box car. But in irregular weather, when it may be hot, we find it well to ship in refrigerator cars.

In early spring, when the nights are cold and it is not hot any time, it would be all right to ship the hives with the entrances entirely closed, except for what air may pass between the block and the entrance. This is especially safe if the bees have a super or an upper story in which they can congregate and they are not closed longer than a day. But if there is an opportunity for warm weather, or if the colonies are very strong, it is best to have a screen over the top of the combs. I do not like to put the screen across the entrance, because they are accustomed to go out at that spot and are likely to crowd there and clog the entrance ventilation. Much depends upon the date of shipping and the weather.

RYE FLOUR AS POLLEN

I wish to ask you a question regarding "rye flour" as a substitute for pollen, to be used for early spring feed for bees where bees are provided for warmth to rear young bees, the honey being provided. The scheme is to rear stronger swarms for the hoped-for crop, starting even before the trees are in bloom.

Is pure "rye flour" an adequate substitute for pollen?

SOUTH DAKOTA.

Answer—This is a point on which the scientists do not agree with us, practical beekeepers. They say plainly that flour is of no use for pollen substitute and that brood will starve on it. But Dzierzon, Mr. Langstroth, Quinby and others tried it and recommended it. We not only tried it, but used hundreds of pounds of it, wheat flour, rye flour indifferently. We saw the best colonies store it in the cells and use it for brood food, and never saw any damage arising from its use. In fact the colonies that used the most of it proved the best in population afterwards.

We fed this flour in boxes, packed in lumps with the hands so that the bees would not drown in it. We used old combs as a bait to attract the bees to it. In a little while they would come by thousands.

Now it is quite probable that the flour is not so good as pollen and that in the course of time the bees would suffer for want of pollen. But we can testify that the flour urged the bees to breed more plentifully.

PACKAGE BEES IN STERILIZED EQUIPMENT

Last fall I had one bee yard of about sixty stands of bees that were bad with American foulbrood. I destroyed all comb and frames, and scorched the tops, bottoms, inner covers and hive body with a blow torch.

Would you advise buying package bees next spring and putting them on full sheets of foundation? Would you advise getting them early and feeding them on sugar and let them build up on the honeyflow?

Will a two-pound package build up and make enough surplus to carry them through the winter?

IOWA.

Answer—Yes, I would refill those hives with package bees from the South. If you have done the job carefully, you have destroyed the disease, and the only way in which it may get to your bees again would be by the way it came. But we must hope that the source they got it from is extinguished. We kept bees for forty years before we ever saw a case of foulbrood. It will surely get back to that some time.

Feed them sugar syrup, rather than candy, in the spring, for they need water to make the jelly for the brood.

The two-pound packages usually do very well and sometimes make a lot of surplus. But three-pound packages are still better.

Order them early, to reach you by fruit bloom. If you don't order till you want them, you may be disappointed in getting them soon enough. Order them during the winter.

EARLY BROOD

I have a hive of bees which is starting to breed—have brood in two frames, some capped over already. The colony went into winter quarters in two hive bodies (ten-frame) crowded with bees, packed with about six inches of finely chopped straw on all sides, and approximately seventy-five pounds of honey. I would say they now have fifty pounds of honey, eight full frames and two with brood and honey, in the upper story. I don't know whether there is any brood or honey in the lower hive body or not.

I have two more colonies (only have three) that went into winter quarters in practically the same condition. I don't think either one is rearing brood. I got suspicious of the other hive when they were flying at 50° F. They still have sufficient bees to cover eight frames.

What is the cause of this—too much honey or packing, or just plain cussedness on the part of the bees? What would you do to save them? Or is there any hope for them?

WEST VIRGINIA.

Answer—I do not believe that your colony is in any danger if it has fifty pounds of honey. The two combs of brood are rather premature, but I have seen bees winter finely with brood as early as January. Much depends upon the season. It has probably been warm in your locality. If they have an occasional warm day, so that they can get water for the brood pail, they will get along all right. If it becomes very cold, they will probably reduce their brood laying. Avoid disturbing them, for whenever you do, you give them just that much of an incentive to go about.

If you think they fly too often, put a few boards of shade over the hive. But unless the weather is very windy, their flying out at 50 degrees will not cause much loss.

It is not likely that they have any brood in the lower story.

Louis Jouno Dead

Louis F. Jouno, 84, who was connected with the bee and honey industry for many years, also a director of the Colorado Honey Producers' Association, died in Denver, at the home of his son, Walter, December 8. Besides his son Walter, he is survived by another son, Arsene, and one daughter, Mrs. Helen Bannard, of Los Angeles.

J. B. D.

The Adventures of the Bee Fairies

(Continued from page 74)

our babies to eat, so we must have water to thin it. Then, too, in feeding them we need water to mix with the pollen, as the fine dust we gather from flowers is called. This makes a wonderful food for our babies and helps them grow very fast, so you see whenever we have baby bees we must have water.

"Sometimes we get it from pools or brooks, near pumps or hydrants. At other times we sip the dew from grass and leaves. Sometimes thoughtful people fix a trough or tub of water near our homes and fill it with floats of wood or cork so we can rest while we drink; but water we must have, and I am glad you are ready to help us get it."

Fleet Wing took a long draught of water from the brook, smoothed her wings carefully, and said: "But before we start for home I must give you a word of caution about our police women. You know we have always to protect our homes, and it is their duty to do this. Some of them are very cross and officious. We have one, Madame Poorsite, who is especially so. She cannot see well. I must warn you of her. She always stands at the right of the door and challenges almost everyone who enters. I will go to the left, however, where the police women are old friends of mine; in fact we were reared in adjoining cradles. These friends of mine will let you in, so keep close to me. Come, let us fly over this tall bush; it is the shortest way home."

Away they all flew, their strong wings bearing them splendidly even with their heavy loads of water. Doris May and Mildred, in spite of their bee fairy disguise, kept close to Aunt Laura and Fleet Wing, but Robert and Dickey flew boldly along, asking all manner of questions about Madam Poorsite, to which Fleet Wing merely answered: "While we rest at home I'll tell you of her adventures."

(Further adventures of the bee fairy children and Fleet Wing will be told in our next issue.)

Meetings and Events

(Continued from page 69)

age bees; this meeting gives the northern buyer a chance to come south, spend a pleasant vacation, visit in person his prospective shipper, see the inspector, and find out in general his standing. Wonderful work could be done along this line to the mutual benefit of all concerned.

Another reason is this: for shippers to possibly try to get together on prices, to sell so that cut-throat methods which force sales below the production cost may be avoided, thus assuring the shipper of something for his work and the buyer something for his money. These are just two points that almost every buyer and seller of packages are interested in.

Another reason would be to try to line up various neighboring state summer meetings so that those wishing to visit them could take in several at one trip south. This has been worked at for years with varying success.

The Southern States Beekeeping Conference has no dues, no paid officers, no expensive publications. Any beekeeper who comes is entitled to all voting privileges and to take part in all discussions. I believe that this freedom from red tape has been, and will be, a big factor in the success of the Conference. A beekeepers' conference should be free, and not bound by law or parliamentary custom, in order to be at its best.

Now remember this meeting is held right during the "carnival season," and railroad rates to New Orleans for the Mardi Gras festival prevail. You can take in both at the expense of one. Headquarters for the convention will be Hotel Heidelberg. A banquet, which is usually the best part of the convention, will be held on Thursday night. Everyone is invited to attend this banquet, the toastmaster being E. Guy Le Sturgeon, editor of the "Beekeepers' Item," and the beekeeper who bluffed Colonel Roosevelt into letting him join the Rough Riders after the doctor had rejected his candidacy. The meeting will be adjourned in Baton Rouge on Friday, February 28, to meet in New Orleans the following Monday night at a meeting place to be decided later by popular vote.

Jes Dalton, Conference Sec'y.

Indiana Short Course

The eighth annual short course for Indiana beekeepers will be held at Purdue University, Lafayette, Indiana, on February 17, 18 and 19, in room 102, Agricultural Building, starting session on Monday at 1:15 p. m.

One of the best programs so far prepared for these short courses is promised this year, with speakers of note, including Russell H. Kelty, of Michigan; G. H. Cale, associate editor American Bee Journal, from outside the state, and B. E. Montgomery, Jay Smith, Leroy Jones, J. R. Stelle, Orin Jessup, Lee R. Stewart and C. A. Yost from Indiana. Programs may be secured by writing to J. J. Davis, Purdue University, Lafayette, Indiana.

Colorado Annual Meeting, March 4 and 5

The Colorado Honey Producers' Association will hold its annual meeting March 4 and 5 at the auditorium of Hotel Denver. Tuesday will be devoted to business matters and election of directors. Association members are expected to be present.

A banquet is arranged for Tuesday evening and an interesting program for Wednesday. Communicate with Frank Rauchfuss, secretary, for further details, Denver, Colorado.

Empire State Meeting

New York State beekeepers, at their meeting at Syracuse, December 10-11, reorganized their association, adopting a simple constitution and by-laws and fixing the annual dues at 50 cents. A good, live worker to act as director was elected, like the officers, from each of the principal sections of the state—north, east, south, west, finger lakes, northeast, and central. These directors, who are at the call of the president, are to make a drive for members and work for the organization in every way. An ultimate list of one thousand is expected.

Annual meetings are to be held in different localities about the state, no two meetings in the same place consecutively. A big summer meeting is to be held each year at least one hundred miles away from the previous annual meeting.

The Association unanimously endorsed the work of the state inspector, A. C. Gould. Over fifty-four thousand colonies were inspected and a little over 6 per cent disease found.

Officers elected for the ensuing year are: Howard Myers, Ransomville, president; B. B. Coggschal, Groton, vice-president; E. T. Cary, Syracuse, secretary-treasurer.

Oregon State Meeting

At the December meeting of the Oregon State Beekeepers' Association several resolutions were passed which undoubtedly will mean considerable to the future of beekeeping in that state. Among these were:

(1) Recommended repeal of the registration law now in effect as being inoperative. (2) Recommend the burning of American foulbrood colonies by inspectors be made compulsory. (3) Committee appointed to draft proposed bill. (4) Resolution to place exhibit at the Pacific International Livestock Show.

New York Short Course

The New York State beekeepers' short course will be held at the New York State College of Agriculture at Cornell University at Ithaca the week of February 10 to 15, 1930. This is in conjunction with Farmers' Week, so those who attend will be able to take advantage of the fine things

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offered during the afternoons and evenings of this week. The beekeepers' program will be during the morning of each day. Since the program last year, we have found so much additional material we have thought it advisable to make it another honey short course. Those desiring the latest information about their product, honey, should by all means be present.

Wyoming Bee Men Elect

The executive board of the Wyoming Beekeepers' Association met in annual session in Thermopolis, Wyoming, December 14, and elected A. D. Hardy, of Powell, president; F. S. Harter, Wheatland, vice-president; N. S. Graham of Powell and J. F. Weybright of Wheatland, directors, and E. C. Judson, Douglas, secretary-treasurer. Its 1930 annual meeting will be held in Casper, Wyoming, the dates to be announced later.

J. B. D.

Ontario's Fiftieth Anniversary

The beekeepers of Ontario celebrated the fiftieth anniversary of their association, in Toronto, on November 26. Among other interesting doings, they voted in favor of cooperation in the selling of honey, recognizing that it is impossible to hold to a certain price at wholesale if the sales are entrusted to several firms. Cooperation is in the air and will come sooner or later.

The membership of the Ontario association was, at the time of meeting, 494. This is a splendid showing.

Montana Beekeepers' Association

The Montana State Beekeepers' Association met in Billings on December 9. It was addressed by A. H. Stafford, State Commissioner of Agriculture, and by Frank Rauchfuss, of Denver, Colorado. The Association decided to institute local bodies in different parts of the State of Montana as district branches of the state organization, the officers of these branches to attend the meetings of the State Association. Officers are: C. V. Fisher, president; J. F. Pithoud, vice-president, and O. A. Sippel, secretary-treasurer.

West Virginia Meeting

The annual meeting of the West Virginia Beekeepers' Association was held at Martinsburg, West Virginia, on November 29. It was one of the best attended and most enthusiastic meetings held by West Virginia beekeepers in a long time. Talks were given by Roy E. Wiseman, president of the Association; Dr. H. E. Knowlton, W. J. Nolan, Dr. H. E. Barnard, and E. R. Roost.

West Virginia being a fruit country, there was a liberal discussion of the interdependence of fruit and

bees. Fruit growers generally are realizing that bees are indispensable as pollination agents and are becoming interested in establishing apiaries themselves or hiring bees from beekeepers for proper pollination.

Doings in the Northwest

(Continued from page 69)

ton late in December, reaching Seattle two days after Christmas. Mr. Wing reports a growing tendency among beekeepers to start and strengthen colonies in spring with package bees, and for that reason this veteran beekeeper is preparing for a material increase in his business during 1930. He came to Seattle primarily to arrange for printing and other work incident to his selling and beekeeping departments.

— 0 —

University of Washington After Facts About Comb Honey

Experiments under way in the University of Washington chemistry laboratory are expected to reveal some interesting facts regarding comb honey. A report should be available for the next installment of this column.

— 0 —

"Nut Fluff," a New Honey Product, Appears in Seattle

A new honey product has made its appearance on the Seattle market. It is known as "Nut Fluff," and contains peanut butter and granulated honey among other ingredients. In consistence it is much like high grade bakers' marshmallow, and it has a delightful flavor. Mr. D. J. Healey is the manufacturer and distributor, and Northwest beekeepers wish him success in "putting over" the new honey delicacy.

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1. To requeen queenless colonies.
2. To replace failing queens.
3. To go with package bees.

PACKAGE BEES

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2. To strengthen weak colonies
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Crop and Market Report

Compiled by M. G. Dadant

For our February number, we asked our correspondents to answer the following questions:

1. How much of the honey has moved?
2. Is honey selling readily?
3. Bee and crop conditions.

HOW IS HONEY MOVING

The reports for our January issue were very discouraging, because it was apparent that honey, which usually takes a slump in sales during the holiday season, had dropped off far more during the present holiday season than it had in previous years.

The reports just coming in are somewhat more encouraging, although the honey sales are yet slow. It was encouraging to note that practically all of the eastern states and north central states are fairly well rid of their honey. Illinois and Pennsylvania perhaps seem to be the exception with in the neighborhood of 50 per cent of the honey still on hand.

In the southeastern states and in fact in the entire South, including Texas, Arizona and New Mexico, honey has practically all moved to market. At least 75 to 90 per cent is sold and there seems to be no doubt but what the balance would be disposed of during the coming two or three months. In Michigan there is apparently a shortage of sales, which, however, does not equal that of Illinois or Pennsylvania.

Furthermore, the amount of honey still in the hands of the wholesale and jobbing houses seems to be fairly large throughout the central western states.

There was apparently a desire on the part of some of the larger producers in the plateau region to dispose of the few cars still left on hand, although a large majority had been sold.

In the intermountain territory there is no large amount of honey left on hand, perhaps 30 to 40 per cent of the entire crop, and this is fairly well held. The only complaints about slow sales seem to be particularly with the parties who have comb honey to sell. For some reason or other, comb honey is not moving. It has moved much better in some of the central areas, particularly where the new type of cellophane wrappers has been used. We have heard of several large lots of honey purchased by wholesalers and retailers being repacked in these wrappers so as to make an air-tight, dust-proof container, which has been increasing the sales very materially.

On the western coast and in the northwest areas, Washington seems to perhaps have more honey than any place else. There is a fair supply still left on hand in Oregon and very little honey in California.

All in all, it is apparent that there is perhaps a little more honey left on hand at this time in 1930 than there was at the same date in 1929, and the demand does not seem to be quite as good, although it is advancing somewhat.

HOW IS HONEY SELLING?

There was no report from anyone that honey was selling at a rapid rate and that the demand approached that of last year. There were, however, quite a large number of reports stating that practically all honey had been disposed of and no more was left on hand to be offered, with a few beekeepers stating they were purchasing honey to continue to supply their customers.

We believe that the Southeast perhaps is doing better in the sale of its honey than are the northern areas, although there is a tendency to drop the prices somewhat over what they were earlier in the season.

Texas, which reported a very sluggish sale earlier, is now reporting practically all honey moved and conditions very good for the coming year.

In the Canadian provinces the bulk of the honey crop has moved and there does not seem to be any doubt but that the balance will move before the new crop comes in.

As to prices, it is apparent that car lots of honey are not moving with the same rapidity for the same price as they did during the fall months. We learn of a number of carloads which are seeking markets at a price of 7½ cents per pound, with a price of 7 cents offered. There seems a tendency on the part of beekeepers still to hold for the 7½-cent price, and perhaps the demand may quicken sufficiently in the next few weeks so that this may be secured.

CONDITION OF BEES AND FLORA

The entire northern sections, with a few exceptions, have been covered with a bounteous fall of snow, and conditions seem to be better than ordinary for honey plants. As to the condition of bees, the cold has been excessive and the cold spells have lasted for a longer time than is usual. Many reporters stated that they were afraid that the long-continued cold was going to make the bees fare badly, and one or two stated that bees were already rushing out of their hives even in the cold weather. Cellar-wintered bees, of course, are in satisfactory condition.

Snows undoubtedly have had the result of covering satisfactorily the clover plants which have been left from last year, so that in this respect we believe that conditions for a honeyflow during the 1930 season are better than they were a year ago. We do not believe that the condition of bees is any worse, with less tendency to have starving bees and perhaps a little more tendency to have losses through long confinement.

In the southeastern states conditions are very satisfactory, either being normal or above normal. In Texas we believe that there is optimism on condition of bees and crops.

In the intermountain areas the warm weather prolonged during the fall and early winter was inclined to use up much of the stores of the colonies.

The winter has now set in in earnest and the question is whether there will not be heavy losses following the late fall because of shortage of stores and also prolonged confinement in the hives with the bees which are chiefly wintered out of doors.

In the northwestern states of the Pacific Coast and in northern California there have been abundant rains and conditions are very satisfactory. In southern California rains have been very deficient, but a recent report, on January 9, stated that two inches of rain had fallen and prospects were a little better, although very much more rain was needed if conditions were to resume anything like normal.

California, therefore, is hoping for a crop this season, although still desirous of much more rain, as conditions on January 1 were getting desperate on account of the prolonged drouth.

Undoubtedly there will be large losses of bees in southern California because of the prolonged dry spell and the fact that bees were unable to gather any fall honey to carry them over winter.

THE TARIFF

Considerable question has been placed by a number of beekeepers as to the effect of the additional German tariff. Undoubtedly this additional tariff is going to have some effect on the exports of honey. The one thing that should be pointed out is that even though Germany previously had a duty of 4 1/3 per cent on honey, the exports to that country were far in advance of those to any other country. This would lead us to believe that honey is used at a far greater rate in Germany than it is in surrounding European countries.

It would seem apparent that what we need to try for above all is to educate the people of the United States to the use of honey, as has been done in Germany and other European countries.

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TESTED QUEENS—For the winter months. Queens for sale any time, sent anywhere: \$1.00 each. Send the order, get the queen, save the colony. D. W. Howell, Shellman, Georgia.

PACKAGE BEES AND QUEENS—Jasper Knight, Hayneville, Ala.

SUNNYLAND BEES ALWAYS PLEASE. Inquiries solicited. Crenshaw County Apiaries, Rutledge, Ala.

GOLDEN ITALIAN QUEENS for 1930, the big, bright, hustling kind; the kind that get the honey. Satisfied customers everywhere. Untested, \$1.00 each; six, \$5.00; twelve, \$9.00; \$65.00 per hundred. Tested, \$1.50 each. Two-frame nuclei and two-pound packages a specialty. Write for prices. Safe arrival guaranteed. Health certificate furnished. E. F. Day, Honoraville, Ala.

CAUCASIAN QUEENS for 1930 from imported mothers. One, \$1.50; six, \$7.50; twelve, \$14.00. Eighty-five per cent pure mated. Safe arrival and satisfaction guaranteed in U. S. A. and Canada. Tillery Bros., R. 6, Greenville, Ala.

HIGHEST grade Italian queens—Tested, \$1.50; untested, 75 cents. Package bees, one pound, \$1.50; two pounds, \$2.50; three pounds, \$3.25. Have had no disease. State inspection certificate with each shipment. Safe delivery guaranteed. T. L. Davis, Buffalo, Leon County, Texas.

HIGH GRADE three-banded Italian tested queen with two frames and three pounds of bees for \$5.00. Spring delivery. Satisfaction guaranteed. Rev. G. Besselaar, Bordeloville, La.

PACKAGE BEES AND QUEENS—Let us quote you prices that will save you money. Thomson & Hodges, Cottonwood, California, and Coeur d'Alene, Idaho.

MONEY-WORTH packages with young queens. Let us give you our prices. The Stearns Bee Co., Brady, Texas.

ITALIAN BEES AND QUEENS—Write for price list. Wm. Piefer, Gause, Texas.

YOUNG Italian queens and baby bees for your 1930 requirements. The price is right and it costs you nothing to book your order. One two-pound package with queen, \$3.25; ten, \$3.00 each; twenty-five, \$2.85 each; one hundred, \$2.75 each. Three-pound packages, \$1.00 each more. Good, heavy packages, shipped when you want them. No disease. Safe arrival guaranteed. The Stover Apiaries, Tibbee Station, Miss.

Advertisers offering used equipment or bees on combs must guarantee them free from disease, or state exact condition, or furnish certificate of inspection from authorized inspector. Conditions should be stated to insure that buyer is fully informed.

PACKAGE bees and queens. More than 4,000 colonies in good locations to insure us plenty of young bees for spring delivery. Our queens reared are the very finest. Write for prices, specifying quantities wanted. Twenty-two years in the bee business. Principal shipping points Chico and Tracy. References, Diamond Match Co., Chico, Bank of Italy, Chico. C. Koehnen, Glenn, Calif.

EARLY PACKAGE BEES—Prompt shipment beginning May 1. Two-pound package without queen, \$2.50; three-pound, \$3.50. Add price of queen if wanted. Choice, hardy Italian queens \$1.00; ten for \$9.00. Safe arrival guaranteed. Birdie M. Hartle, 924 Pleasant St., Reynoldsville, Pa.

PACKAGE bees and queens. Three-banded Italians. Send for free circular. We can save you money. Little River Apiaries, Box 83, Gause, Texas.

FOR SALE—Hundreds of package bees with Italian queens for April and May delivery from our thousand colonies. They will please you. In professional bee business here since 1905; twenty years' experience with package bees. Allenville Apiaries, Eggeman, Prop., Allenville, Ala.

A CARD will bring our circular of our package bees and queens, or of our seasonably reared queens. Our prices are in line. The Stearns Bee Co., Brady, Texas.

PACKAGE bees and queens. Prices on request. J. F. McVay, Jackson, Ala.

GOLDEN ITALIAN QUEENS—Producing large, beautiful bees, solid yellow to tip. Circular and price list for spring ready. Dr. White Bee Company, Sandia, Texas.

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Copy for this department must reach us not later than the fifteenth of each month preceding date of issue. If intended for classified department, it should be so stated when advertisement is sent.

FOR SALE—Two pounds bees and young Italian queen, \$2.50. Health certificate furnished. Satisfaction guaranteed. Write J. L. Leath, Corinth, Miss.

MY CHOICE queens by return mail. Three-banded Italian queens, each, \$1.00; six, \$5.00. Tested, \$1.50 each. Jul. Buegeler, Alice, Texas.

BEEES AND QUEENS—Get my prices before placing your order. Would be greatly to your advantage. H. E. Graham, P. O. Box 735, Cameron, Texas.

REACROFT Italian bees that please. Select queens: one, 1.00; ten, \$9.00. Two-pound package, \$2.50. Circular for quantity prices. George H. Rea, Reynoldsville, Pa.

FOR SALE

AT exceptional bargain. Twin mating hives. Jumbo or standard frame. Write for particulars. Jay Smith, R. 3, Vincennes, Ind.

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FOR SALE—Vitex trees, one year old, running from 14 to 24 inches. Price 50c each. Will bloom this year. Seed, \$1.50 per ounce. Delivered anywhere, postpaid. Joe Stallsmith, Galena, Kansas.

FOR SALE—Slightly used 10-frame Langstroth dovetailed hives with metal covers. Priced right. F. B. Meacham, Raleigh, N. C.

FOR SALE—Highest quality queen mailing cages. Used extensively by the largest queen breeders in the South. Samples and prices on request. Hamilton Bee Supply Co., Almont, Mich.

FOR SALE—150 stands of bees in southwestern Indiana at \$4.00 a stand. E. J. Cotterill, Elberfeld, Ind.

COMPLETE apiary business for sale in Canada. Address American Bee Journal.

FOR SALE—Seven colonies pure Italian bees, with one body and two extracting supers of honey. Price \$17.00 per colony. Also four colonies brood chamber alone, \$12.00 per colony; also eleven colonies with one extracting super, \$15.00 per colony. Walter M. Johnson, Jemison, Ala.

FOR SALE—For cash: Three hundred colonies bees located in excellent alfalfa and sweet clover location. Equipment for producing extracted honey and to make increase. Located in Wyoming; healthy climate, good educational facilities; good fishing and hunting. Reason for selling, death in family. Mrs. Harvey Whitacre, Saratoga, Wyoming.

FOR SALE—45 Modified Dadant comb supers, Lewis cappings melter, Bingham steam uncapping knife, steam generator, lamp stove and Root Multiplex foundation fastener. Reasonable. Everything like new. Guaranteed no disease. Joseph Burk, Norwalk, Iowa.